

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

**Riverside Industrial Park Superfund Site  
Newark, NJ**

**Dispute Resolution Proceeding Pursuant to Administrative Settlement Agreement  
and Order on Consent for Remedial Investigation and Feasibility Study, CERCLA  
Docket No. 02-2014-2011**

EPA Region 2 Staff Statement of Position

September 4, 2020

Prepared by EPA Region 2 Staff:

Josh Smeraldi, Ph.D Env. Eng.

Remedial Project Manager

Superfund and Emergency Management Division

William Reilly

Assistant Regional Counsel

Office of Regional Counsel

## Introduction

The U.S. Environmental Protection Agency Region 2 (“Region 2” or “the Region”) respectfully submits the following statement of position in response to PPG Industries, Inc.’s July 30, 2020, letter to the Region entitled “Feasibility Study Report: Written Notification of Objections and Invocation of Dispute Resolution, Riverside Industrial Park Superfund Site – Essex County, Newark, New Jersey” (the “Dispute”). This response sets forth the position of Region 2 staff on the subject of the dispute and is being provided to the Director of EPA Region 2’s Superfund and Emergency Management Division (“SEMD”) (formerly the Emergency and Remedial Response Division) for purposes of reaching a decision, pursuant to Paragraph 62 of Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study (“ASAOC”), CERCLA Docket No. 02-2014-2011. PPG invoked the ASAOC’s dispute resolution procedures with respect to (i) the process followed by EPA when it finalized the Feasibility Study Report (“FS Report”) and so notified PPG by letter dated July 21, 2020, and (ii) revisions made by EPA to the FS Report, as outlined in its July 10, 2020 communication and as set forth in the final FS Report.

Contrary to PPG’s claims in the Dispute, neither the Region’s decision to complete the FS Report nor its revisions to that document were arbitrary and capricious. Region 2 followed the procedural provisions of the ASAOC in directing PPG to modify the FS Report, and in modifying and completing the FS Report when PPG did not make the necessary modifications. The Region’s revisions to the FS Report were technically and substantively sound.

In accordance with Paragraph 41 of the ASAOC, by letter dated June 23, 2020 (See Exhibit 1.A), the Region notified PPG of deficiencies in PPG’s June 8, 2020, draft FS Report. After several additional exchanges, in its email communication dated July 10, 2020 (See Exhibit 2), EPA requested that PPG provide the FS Report, with modifications, by July 17, 2020, thus providing PPG with more than 21 days required by ASAOC Paragraph 41 to cure the deficiencies; 21 days is the timeframe identified in the ASAOC for PPG to revise the FS Report. The revised FS Report submitted by PPG on July 17, 2020, did not meet the Region’s directions; therefore, the Region modified the FS Report and notified PPG on July 21, 2020 (See Exhibit 3), that because the revised FS Report did not meet EPA’s requirements, the Region had modified the FS Report and would be placing the final FS Report in the administrative record. The Region’s June 23, 2020 conditional approval letter and subsequent communication on July 10 clearly explained the deficiencies, and the Region completed the report only after PPG’s failure to cure the deficiencies in timely manner.

Likewise, the revisions made by Region 2 to the FS Report, consistent with the directions given on June 23, reiterated and clarified in the Region’s July 10, 2020 communication, are technically sound and supported by factual historical information and site data. In contrast, PPG arguments intended to show PPG’s claim that EPA’s revisions contained there are material flaws in the FS Report as modified by EPA are not supported by the findings in the final Remedial Investigation (“RI”) Report approved by EPA. Furthermore, the arguments presented by PPG are clearly biased in support of its opinion and misleading of the actual findings or statements in the RI. PPG’s assertions to the side, it is PPG that has acted inappropriately by repeatedly failing to follow the Region’s directions. In fact, PPG turns the ASAOC approval process on its head when it suggests that EPA must “address the material flaws” in EPA’s June 23 and July 10 communications

**Commented [FS1]:** Style/consistency comment. Sometimes we use quotation marks in these definitions, and sometimes we do not. Please pick an approach and be consistent.

**Exemption 5, Deliberative, Attorney-Client**

**Commented [FS3R2]:** I like your suggested changes.

**Commented [SJ4R2]:** I made the change

**Commented [J5]:** Adding exhibits to a folder, I will share later

**Formatted:** Not Highlight

**Formatted:** Not Highlight

**Formatted:** Not Highlight

**Exemption 5, Deliberative, Attorney-Client**

**Commented [FD7]:** Josh did that-



Timeline and documents.msg

**Exemption 5, Deliberative, Attorney-Client**

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

concerning required revisions the FS Report to PPG's satisfaction, whereas under the ASAOC it is PPG's responsibility to perform work properly and promptly, including by submitting deliverable to the Region that the Region is able to approve in accordance with the provisions of the ASAOC, the Statement of Work ("SOW"), CERCLA, the National Contingency Plan ("NCP") and EPA guidance.

Commented [SM12]: Or approvable?

**I. Region 2's Completion of the FS Report was Procedurally Consistent with the ASAOC and was not Arbitrary and Capricious**

**A. The Region's June 23, 2020, Conditional Approval Letter Identified Deficiencies in PPG's June 8, 2020 FS Report**

The Region's June 23, 2020, conditional approval letter notified PPG that, pursuant to Paragraph 41(b) of the ASAOC, EPA was approving PPG's June 8, 2020, draft FS Report "conditioned upon PPG's incorporation of the attached comments from the attached EPA mark-up of each document [e.g., FS document text mark-up – to incorporate language, response to PPG's June 8 submittal comments, revised figures, revised tables, revised appendix (A and B)] into" the FS Report. (See Exhibits 1.B. through 1.J.). Specifically, the June 23, 2020 conditional approval letter included attachments that clearly identified provisions in PPG's June 8, 2020 draft FS Report that were unacceptable to the Region and needed to be corrected in order for the Region to approve the document. Such unacceptable provisions were "deficiencies" subject to correction pursuant to ASAOC Paragraph 41. Deficiencies in the mark-ups sent to PPG included but were not limited to the addition of certain metals in groundwater in the discussion of site-related contaminants (See Exhibit 1.C., at comment nos. 49 and 51), the statement that groundwater restoration must be to Class IIA standards [Id. at comment nos. 26, 88, 89, and 116], and the statement that Monitored Natural Attenuation must be screened out since it is not proven to be a viable alternative [Id. at comment nos. 116, 118, 140, and 141]. Furthermore, among other edits, the Region and New Jersey Department of Environmental Protection ("NJDEP") identified significant concerns with PPG's use of compliance averaging and provided detailed edits that PPG was to make throughout the draft FS Report (i.e., figure, tables, and text changes) in its application of point by point compliance (See Exhibits 1.B. through 1.J.).

**Exemption 5, Deliberative**

**Exemption 5, Deliberative, Attorney-Client**

Commented [RW16]: One document. Separate charts, etc.

Commented [J17R16]: correct

Formatted: Not Highlight

**Exemption 5, Deliberative, Attorney-Client**

Formatted: Not Highlight

Exemption 5, Deliberative

Commented [SJ20R19]: agreed

Formatted: Not Highlight

Commented [FS21]: block quotes should be indented.

Also, I think we can use the language of the AOC – refer to EPA, not the Region, in this place.

PPG asserts that the Region did not follow the procedural requirements of the ASAOC because, in PPG's view, the Region did not provide PPG with the notice of deficiency and opportunity to cure identified in Paragraph 41 of the ASAOC (Dispute, p. 4.), which provides:

After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, EPA shall, in a notice to Respondent: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondent modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Respondent at least one notice of deficiency and an opportunity to cure within 21 days or as specified in the RI/FS Work Plan, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved because of material defects.

PPG argues that the Region's June 23, 2020 conditional approval letter did not identify "deficiencies" in the June 8 FSR because it did not include the word "deficiencies." (Dispute, p. 4.) If the Region had not found the June 8, 2020 draft FS Report to be deficient, however, there would have been no need for the Region to require changes to the draft FS Report as a condition of approving it. EPA would simply have approved the June 8, 2020 draft FS Report pursuant to Paragraph 41(a) of the ASAOC without conditions. PPG's argument that the Region's June 23, 2020 conditional approval letter did not identify deficiencies simply because the letter did not mention the word "deficiencies" strains credulity given that the Region's comment matrix enclosed with the June 23, 2020 letter identified thirty-three instances where the text of the June 8, 2020 draft FS Report needed to be modified because as discussed above, PPG had not fully addressed prior Region 2 comments on earlier drafts of the FS Report. The Region clearly stated in its June 23, 2020 conditional approval letter that its approval of the June 8, 2020 draft FS Report was subject to those corrections being made. The June 8, 2020 draft FS Report was by definition "deficient" because it contained incorrect or otherwise unacceptable language. The Region's June 23, 2020, conditional approval letter therefore notified PPG that its submission was deficient.

There is no basis for PPG's assertion that deficiencies cannot be addressed under Paragraph 41(b), but "are to be identified and addressed under Paragraph 41(d), which relates to disapprovals, not Paragraph 41(b), which addresses conditional approvals."<sup>1</sup> (Dispute, p. 4). Under Paragraph 41(b), the Region "may approve the submission upon specified conditions." The ASAOC does not define "conditions" and there is no provision in the ASAOC that precludes the Region from conditioning an approval on PPG's correction of deficiencies. In fact, it is difficult to imagine why the Region would choose to conditionally approve a deficiency-free deliverable.

PPG also argues that if the Region had identified deficiencies in the June 8, 2020 draft FS Report, "it would have disapproved the submittal under Paragraph 41(d), which would require PPG to" revise and resubmit the report within 21 days." (Dispute, p. 4). While Region 2 had the option of disapproving and requiring PPG to resubmit the report under Paragraph 41(d), disapproving a deliverable under Paragraph 41(d) is not the only available avenue under the ASAOC for correcting deficiencies. In the spirit of working cooperatively while keeping the RI/FS on schedule, and as PPG well knows, the Region has in the past conditionally approved PPG deliverables under Paragraph 41(b), with the approval being subject to PPG the certain issues identified by EPA in its conditional approval.<sup>2</sup> The Region's June 23, 2020 conditional approval was similarly provided in that same spirit. Unlike PPG's responses to the Region's aforementioned

<sup>1</sup> Deficiencies may also be addressed under Paragraph 41(c), under which EPA may "modify the submission to cure the deficiencies."

<sup>2</sup> RI/FS submittals "conditionally approved" by EPA and then submitted in revised form by PPG consistent with the Region's directions, include: Remedial Investigation and Feasibility Study Work Plan, Riverside Industrial Park Superfund Site, Newark, New Jersey, Revised: July 18, 2017; Site Characterization Summary Report Addendum, Riverside Industrial Park Superfund Site, October 2018; Development and Screening of Remedial Alternatives Technical Memorandum, Riverside Industrial Park Superfund Site, August 28, 2019; SLERA - Draft (Version 2) Screening Level Ecological Risk Assessment, Riverside Industrial Park Superfund Site, January 17, 2020; BHHRA - Draft (Version 2) Baseline Human Health Risk Assessment, Riverside Industrial Park Superfund Site, January 17, 2020; RI - Draft (Version 2) Remedial Investigation Report, Riverside Industrial Park Superfund Site, January 17, 2020.

**Commented [SJ22]:** This seems to duplicate examples of deficiencies in the conditional approval. Some examples already given in the first paragraph of section I.A.

**Commented [FS23R22]:** No need to give a paragraph citation if we are just referring back to text above in this section.

**Commented [SJ24R22]:** I am confused, should I keep (e.g., See I.A.)

**Commented [FS25R22]:** No, I don't think so. Citing to exhibits makes sense, or earlier sections, but there is no need to put in a citation to a paragraph in the same section. Assume the reader will remember what he/she just read on the previous page.

Could say, discussed above. ...

**Formatted:** Font: Italic

**Formatted:** Font color: Auto

**Exemption 5, Deliberative,  
Attorney-Client**

**Formatted:** Font color: Auto

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

prior conditional approvals for Riverside (*See* fn.2), here PPG simply continually rejected the Region's direction and even after further discussions with the Region, PPG did not make the necessary revisions.

The fact that the Region was willing to continue discussing the changes required by the June 23, 2020 conditional approval letter in no way suggests that the Region did not consider the draft June 8, 2020 FS Report to be deficient, as suggested by PPG. (Dispute, p. 5). Similarly, whether PPG disagreed with the Region as to the technical merit of those edits has no bearing on the particular question of whether Region 2 identified to PPG that it considered the draft FS Report to be deficient. PPG states that "[o]n July 17, 2020, PPG and Woodard & Curran reached out to [Region 2] to discuss [Region 2's] arbitrary and capricious July 10 Revisions and July 14 letter, which still failed to address the material flaws in [the Region's] June 23 Revisions." (Dispute, p. 6). This statement has the ASAOC's document approval provisions backwards; it is PPG that is responsible for submitting a deliverable that is acceptable to the Region, and not the other way around. EPA identified deficient provisions of the draft June 8 FS Report, but was willing to work with PPG to help PPG understand and implement EPA's comments. Yet, despite the Region's efforts PPG simply was not willing to submit an acceptable FS Report.

PPG argues that "[t]he facts show that USEPA and PPG were not operating as though PPG's [FS Report] submittals were deficient. Instead, [Region 2] and PPG were engaged in a cooperative process to revise the [FS Report] and address the material flaws in [Region 2's] June 23 and July 10 [FS Reports]." Again, PPG has the process backwards. The Region found flaws in PPG's draft technical document that prevented the Region from approving it as submitted, but in an effort to finalize the document, gave PPG and its representatives very detailed comments, and conditioned approval on incorporation of those comments. When PPG apparently struggled to understand and/or accept Region 2's direction, the Region showed great patience and a willingness to work with PPG, just as the Region had done in the past with other RI/FS deliverables for the site (*See* fn. 2, above, for examples) providing another layer of clarification in the form of its July 10, 2020 markup. PPG was not in a "catch-22" (Dispute, fn. 2) because there was no contradictory condition. Rather, the direction that the Region provided in its "conditional [if-then] approval" as per the ASAOC, was clear, concise, correct (procedurally and substantively), and was reinforced consistently and often. In fact, PPG and the Region had several exchanges concerning the Region's comments and directions; however, on certain issues, such as EPA's directions to screen out Alternative 5, incorporate discussion of potential impacts to the adjacent Passaic River (part of the Diamond Alkali Superfund site), and incorporate factual information regarding lead and PPG's past operations, PPG refused to accept the Region's comments. Further, it is notable that in response to PPG's objection to incorporating factual statements regarding its use of lead in its past operations at the site, the Region offered to discuss with PPG "any not factually accurate" statement(s) identified by PPG. PPG did not identify one.

B.- The Region Provided PPG with 21 Days to Correct the June 8 Draft FS Report Before Modifying the Document, as Required by the ASAOC

After the Region identified deficiencies in the June 8 FS Report that needed to be corrected in order for the Region to approve the document, under Paragraph 41 of the ASAOC Region 2 had the ability to modify the FS Report after providing PPG "an opportunity to cure within 21 days or

## Exemption 5, Deliberative, Attorney-Client

Commented [SJ30R29]: okay

Commented [FS31]: Do we explain that the July 10 email was a clarification of the Jun 23 changes, not a new set of changes?

Also the July 14 letter did not direct any changes to be made, rather, it was an effort by EPA to bend over backwards to explain fundamental technical issues that PPG surely must already have known (but for its own purposes was insisting it did not understand or agree with).

Formatted: Font color: Auto

Commented [FS32]: Excellent point! I wonder if this could be added to the intor.

Formatted: Font color: Auto

Commented [J33]: This isn't written anywhere but we also explained that they had options if they disagree...such as filing a dispute...they still chose to submit a deficient FS followed by a formal dispute. I am not sure if that is worth adding here

Formatted: Font color: Auto

Formatted: Font color: Auto

## Exemption 5, Deliberative, Attorney-Client

Commented [SJ44]: Sounds good

Formatted: Font color: Auto

Commented [FS45]: Consistency with A = caps.

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

as specified in the RI/FS Work Plan, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved because of material defects.”

PPG argues that EPA’s June 23, 2020, email request for PPG to respond to the Region’s June 23, 2020 conditional approval letter within seven days is evidence that the Region -did not consider the conditional approval to be a notice of deficiency that triggered the 21-day period for corrections. (Dispute p. 4, fn. 1). PPG confuses different provisions of Paragraph 41. The 21-day period in Paragraph 41 is a procedural requirement that requires the Region to allow PPG 21 days to cure a deficiency before modifying a submittal itself. The ASAOC, however, does not state that the Region must give PPG 21 days to correct an unacceptable provision of a submittal in order for that unacceptable provision to be deemed a “deficiency.” Moreover, the Region did satisfy the 21-day requirement before it modified the deficient FS Report: Region 2’s conditional approval letter identified unacceptable provisions (i.e., deficiencies) in PPG’s draft FS Report and was transmitted to PPG on June 23. On June 30, PPG submitted a revised FS Report that did not adequately address EPA’s comments. PPG notes in the Dispute that the Region and PPG engaged in several discussions and written exchanges in an effort to reach agreement on the deficiencies that the Region corrected in its June 23, 2020 conditional approval, including a telephone conference, and the Region’s July 10, 2020 email. PPG and the Region also engaged in a technical exchange – another effort by which the Region attempted to assist PPG in greater understanding of the need for the Region’s revisions. At the conclusion of these exchanges, the Region directed PPG to submit the FS Report by July 17, 2020, 24 days after its receipt of the Region’s June 23, 2020 conditional approval letter. Ultimately, those discussions were fruitless insofar as PPG refused to make necessary modifications to the FS Report, instead providing the July 17, 2020 revised FS Report that did not include those changes that the Region provided as a condition of approval in its June 23, 2020 letter.

PPG believes that the Region’s statement in its July 21 letter that the agency’s approval “was conditioned upon PPG’s incorporation into the final FS report of language provided by EPA on June 23 in a mark-up of the June 2020 FS, to cure deficiencies identified by the Region in the June 2020 FS” is “contradicted” by the fact that the final FS Report issued by EPA on July 21 is not the same version Region 2 provided on June 23. (Dispute, p. 5). To the contrary, the fact that the FS Report completed by Region 2 differed from the June 23 version is immaterial to whether the Region’s June 23 letter notified PPG of deficiencies in its June 8 FS Report. There is nothing in the ASAOC that constrains what the Region must include in a submission that it completes pursuant to Paragraph 41(c). While the Region accepted certain PPG comments during the discussions that occurred between June 23 and July 21, the Region’s inclusion of those comments in no way means that the Region “abandoned” the June 23 version, as PPG claims. The Region indicated in its June 23 conditional approval letter that it would approve the FS Report only if PPG made certain corrections to the June 8 FS Report. Twenty-four days passed between EPA’s June 23 conditional approval letter and PPG’s July 17 draft FS Report, during which time the Region attempted to explain to PPG how and why to revise the FS Report such that it would be acceptable to Region 2. Ultimately, PPG refused to sufficiently address the deficiencies -identified in the Region’s June 23 markup. PPG was given more than 21 days to correct the outstanding deficiencies, and the Region’s decision to complete the FS Report pursuant to ASAOC Paragraph 41(c) complied with the 21-day requirement of Paragraph 41.

**Exemption 5, Deliberative,  
Attorney-Client**



## II. Region 2's Modifications of the FS Report are Supported by the Record and are not Arbitrary and Capricious

### A. Region 2's Conceptual Site Model is Supported by Factual Historical Information and Data

In the Dispute, PPG describes the Region's conceptual site model ~~("CSM")~~ as "based on a theory that metal pigments used in paint manufacturing are present in surface soil/fill and are being mobilized into subsurface soil/fill and then into saturated soil/fill, which then results in elevated lead concentrations in groundwater" and asserts "that this CSM is not supported by Site data or the RI" (Dispute, p. 7). As discussed below, both the data and information about historical Site operations support the Region's determination that ~~historical~~ Site operations ~~are~~ contribute a significant source of soil and groundwater contamination at the Site. Region 2's CSM therefore is consistent with the data presented in the ~~RI~~ Remedial Investigation ("RI") Report.

Both the Site data and evidence about historical Site operations support ~~Region 2's~~ the Region's determination ~~that~~ former lead paint manufacturing operations at the Site ~~are~~ contributed a significant source of lead contamination ~~in surface to the soil and groundwater~~. From approximately ~~1903~~ 1902 to 1971, the Site was used for paint, varnish, linseed oil, and resin manufacturing by Patton Paint Company ~~("Patton")~~, which merged into the Paint and Varnish Division of Pittsburgh Plate Glass Company in 1920. Pittsburgh Plate Glass Company changed its name to PPG Industries, Inc. in 1968. PPG conveyed its interest in the Site in 1971. PPG's Remedial Investigation (RI) Report (~~Woodard & Curran, 2020~~) See Exhibit 4.A.) states on page 1-3 that "Pigments would have been brought to the Site and used in the manufacture of paints. These were often metallic chemicals and would have included compounds of cadmium, chromium, lead, titanium and zinc. Basic lead carbonate (white lead) would have been one of the pigments used as a raw material." This statement is consistent with the following two historical references to the use of basic lead carbonate on the Site:

- A historical brochure for Patton, PPG's corporate predecessor, Sun-Proof Paints printed circa 1897 states that "The composition of ~~Pattons~~ Patton's White is printed on every can, and is strictly pure white lead and zinc oxide, both doubly ground in strictly pure linseed oil to impalpable fineness, with the right amount of silica (Patton's secret)" (See Exhibit 45 at pg. 1).
- Patton employee Frank Lane testified about Patton's use of lead carbonate and zinc oxide to the United States Supreme Court in Heath & Milligan Mfg. Co. v. Worst, 207 U.S. 338 (1907) on page 190 (Paragraph 323) of the Court's Transcript of Record. (See Exhibits 56.A. for the entire transcript; and 56.B. for a relevant clip of the transcript).

~~The original paint plant was constructed in the early 1900s by the Patton. Historical~~ Historical manufacture of white lead pigment was originally accomplished by corroding sheets or plates of lead (sometimes referred to as lead buckles) by applying heat and moisture, carbon dioxide, and acetic acid vapor. The corrosion product created from the lead sheets was the lead carbonate (or white lead) pigment, which was scraped off and finely ground into a powder. While it is not known if Patton, and later PPG, produced lead ~~pigments~~ pigment at the Site from metallic lead or purchased and conveyed to the Site as lead carbonate, the large amount of paint known to have

## Exemption 5, Deliberative, Attorney-Client

Commented [FS54]: I took this from the AOC, so that the relationship of Patton to PPG would be clear to the reader.

Commented [SJ55R54]: Looks good

Commented [SJ56]: Yes, First it was Patton Paint, then they merged and became known as Pittsburgh Plate Glass, which is generally known as PPG.

Commented [FD57]: is this how Patton's appears in the quote? Also, either provide a link to this document or attach excerpt as an exhibit.

Commented [J58R57]: Fixed, should be Pattons'

Commented [FD59]: We should include a link to this document or list at the end as a reference

Commented [J60R59]: I am not sure how to reference this. We may need to add it as an attachment

Commented [FD61]: This position paper cites to a number of other outside sources. The should either be listed as references, or a link should be provided where available, in case Pat (or PPG) wants to look at any of them

Commented [J62R61]: As discussed, I will create appendix with attachments and add references as appropriate

Formatted: Not Highlight

Formatted: Not Highlight

## Exemption 5, Deliberative, Attorney-Client

Commented [J64R63]: Len sent around a copy of the transcript, I will add as attachment

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Commented [FS65]: I did address that above, so not sure we need it here.

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

been manufactured by Patton at the Site suggests that the company used a large quantity of white lead pigment at the Site in connection with those operations. The amount of white lead carbonate pigment that Patton used in the early 1900's can be conservatively estimated based on the volume of documented paint production at the Site. The document "Use of United States Government Specification Paint and Paint Materials" by P.H. Walker and E.F. Hickson (August 1924) contains minimum recommended quantities of components in certain paints. (See Exhibit 67.A. at 36). Paint formulations based on a combination of white lead and zinc oxide pigments (as used by Patton) are addressed in rows 7-9 of Table 1 in the referenced document and (See Exhibit 7.B., figure, embedded below), which recommend 50 pounds (lbs) white lead and 50 lbs of zinc oxide to yield anywhere from 7 to 11  $\frac{3}{4}$  gallons of paint per batch -(See-

TABLE 1.—Mixing formulas using Federal Specifications Board paste pigments, and dry red lead

Formula number	Paste white lead, Federal Specifications Board Nos. 6 or 6	Paste zinc oxide, Federal Specifications Board Nos. 8 or 9	Dry red lead, Federal Specifications Board No. 11	Paste red lead, Federal Specifications Board No. 11	Paste titanium pigment, Federal Specifications Board No. 111	Raw linseed oil, Federal Specifications Board No. 4	Boiled linseed oil, Federal Specifications Board No. 4	Turpentine, Federal Specifications Board No. 7	Drier, Federal Specifications Board No. 20	Varnish, Federal Specifications Board Nos. 18 or 22	Approximate yield	Used for—
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Gals.	Gals.	Gals.	Pts.	Pts.	Gals.	
1.....	100	.....	.....	.....	.....	3 to 4.....	.....	2 to 4.....	1 to 2.....	.....	7½ to 11.....	(1)
2.....	100	.....	.....	.....	.....	.....	7.....	1½.....	.....	.....	10½.....	(2)
3.....	100	.....	.....	.....	.....	.....	.....	1½.....	.....	.....	11.....	(3)
4.....	100	.....	.....	.....	.....	.....	.....	1½ to 2½.....	.....	.....	6 to 7.....	(4)
5.....	100	.....	.....	.....	.....	3 to 4½.....	.....	½ to ¾.....	.....	.....	6½ to 7½.....	(5)
6.....	100	.....	.....	.....	.....	.....	.....	½ to ¾.....	.....	.....	4½ to 6½.....	(6)
7.....	50	50	.....	.....	.....	3 to 4.....	.....	½ to ¾.....	.....	.....	8½ to 11½.....	(7)
8.....	50	50	.....	.....	.....	1½ to 2.....	.....	2 to 3.....	.....	.....	7½ to 8½.....	(8)
9.....	50	50	.....	.....	.....	3 to 4.....	.....	½ to ¾.....	2 to 3.....	.....	7 to 8½.....	(9)
10.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	5½.....	(10)
11.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	5½.....	(11)
12.....	60	.....	60	.....	.....	.....	.....	1½ to 2.....	1 to 2.....	.....	6 to 8½.....	(12)
13.....	60	.....	60	.....	.....	1½ to 4.....	.....	1½ to 2.....	1 to 2.....	.....	6 to 7.....	(13)
14.....	.....	60	.....	60	.....	4 to 4½.....	.....	2 to 4.....	4 to 5.....	.....	10½ to 12½.....	(14)
15.....	.....	40	.....	60	.....	2 to 2½.....	.....	2 to 3.....	.....	.....	8½ to 10½.....	(15)
16.....	.....	40	.....	60	.....	4 to 4½.....	.....	½ to ¾.....	4 to 5.....	.....	9½ to 10.....	(16)

1 For first (priming) coats, wood, new work.  
2 Volatile mineral spirits F. S. D. No. 16 can be used in place of turpentine in this formula.  
3 For first (priming) coats on plaster, concrete, cement, brick, and stone, new work.  
4 For body coats, wood, outside, new, and first coat repainting.  
5 For finish coats, outside.  
6 For finish coats, inside, flat to eggshell gloss.  
7 For first (priming) coats on metal.  
NOTE 1.—In nearly all of the above formulas, except for priming coats on new wood, a mixture of one-third to one-half boiled linseed oil and the remainder raw linseed oil may be substituted for the raw oil, omitting the drier.  
NOTE 2.—In using the mixing formulas read across the page on the horizontal line; for example, formula No. 9 reads thus:  
60 pounds paste white lead,  
50 pounds paste zinc oxide,  
3 to 4 gallons raw linseed oil,  
½ to ¾ gallons turpentine,  
2 to 3 parts drier.  
7 to 8½ gallons of paint, for finish coats, outside.

Exhibit 67.B.: 1924 United States Government specifications for mixing components of paint, figure, embedded below).

Patton's operation at the Site is estimated to have produced about 42,000 gallons<sup>3</sup> of paint per week (Bernardsville News, Bernardsville in the early 1900's (See Exhibit 8, Argus Ledger, Newark, NJ, January 27, 1903). December 31, 1902). For a white lead/zinc oxide mixture similar to that specified by the United States government in 1924, and assuming approximately 50 lbs of white lead for approximately every 10 gallons of paint manufactured, the plant would have

<sup>3</sup> 6,000 gallons per day was mentioned by the Argus Ledger article and 42,000 gallons per week was calculated using this reference.

Formatted: Not Highlight

Exemption 5, Deliberative, Attorney-Client

Commented [J67R66]: See edit

Formatted: Not Highlight

Commented [SM68]: Where is Table 1?

Commented [J69R68]: Added exhibit below with copy of the table and edited language

Formatted: Not Highlight

Formatted: Not Highlight

Exemption 5, Deliberative, Attorney-Client

Formatted: Not Highlight



required 210,000 lbs of white lead pigment per week as a feedstock.

Exemption 5, Deliberative,  
Attorney-Client

Exemption 5, Deliberative,  
Attorney-Client

TABLE 1.—Mixing formulas using Federal Specifications Board paste pigments, and dry red lead

Formula number	Paste white lead, Federal Specification Board No. 5 or 6	Paste zinc oxide, Federal Specification Board No. 8 or 9	Dry red lead, Federal Specification Board No. 11	Paste red lead, Federal Specification Board No. 11	Paste titanium pigment, Federal Specification Board No. 113	Raw linseed oil, Federal Specification Board No. 4	Boiled linseed oil, Federal Specification Board No. 4	Turpentine, Federal Specification Board No. 7	Drier, Federal Specification Board No. 20	Varnish, Federal Specification Board No. 18 or 22	Approximate yield	Used for—
	Lbs.	Lbs.	Lbs.	Lbs.	Gals.	Gals.	Gals.	Pts.	Pts.	Gals.		
1.....	100	.....	.....	.....	.....	.....	7	1 to 2.....	.....	7½ to 11.....	(1)	
2.....	100	.....	.....	.....	.....	.....	7	1 to 2.....	.....	10½ to 11.....	(2)	
3.....	100	.....	.....	.....	.....	.....	7	1 to 2.....	.....	11 to 11½.....	(3)	
4.....	100	.....	.....	.....	.....	.....	7	1 to 2.....	.....	6 to 7.....	(4)	
5.....	100	.....	.....	.....	.....	3 to 4½.....	1½ to 3½.....	1 to 2.....	.....	6½ to 7½.....	(5)	
6.....	100	.....	.....	.....	.....	3 to 4.....	1½ to 3.....	1 to 2.....	.....	4½ to 6½.....	(6)	
7.....	50	.....	.....	.....	.....	3 to 4.....	2 to 4.....	1 to 2.....	.....	8½ to 11½.....	(7)	
8.....	50	.....	.....	.....	.....	1½ to 2.....	2 to 3½.....	1 to 2.....	.....	7½ to 8½.....	(8)	
9.....	50	50	.....	.....	.....	3 to 4.....	1½ to 3½.....	2 to 3.....	.....	7 to 8½.....	(9)	
10.....	100	.....	100	.....	.....	3½.....	2½.....	2½.....	.....	5½.....	(10)	
11.....	100	.....	100	.....	.....	3.....	2.....	2½.....	.....	5½.....	(11)	
12.....	60	.....	40	.....	.....	2 to 4.....	1½ to 2.....	1 to 2.....	.....	6 to 8½.....	(12)	
13.....	60	.....	40	.....	.....	1½ to 4.....	1½ to 2.....	1 to 2.....	.....	6 to 7.....	(13)	
14.....	40	.....	60	.....	.....	4 to 4½.....	2 to 4.....	4 to 5.....	.....	10½ to 13½.....	(14)	
15.....	40	.....	60	.....	.....	2 to 3½.....	2 to 3½.....	4.....	.....	8½ to 10½.....	(15)	
16.....	40	.....	60	.....	.....	4 to 4½.....	1½ to 3½.....	4 to 5.....	.....	9½ to 10.....	(16)	

<sup>1</sup> For first (priming) coats, wood, new work.  
<sup>2</sup> Volatile mineral spirits F. S. B. No. 16 can be used in place of turpentine in this formula.  
<sup>3</sup> For first (priming) coats on plaster, concrete, cement, brick, and stone, new work.  
<sup>4</sup> For body coats, wood, outside, new, and first coat repainting.  
<sup>5</sup> For finish coats, outside.  
<sup>6</sup> For finish coats, inside, flat to eggshell gloss.  
<sup>7</sup> For first (priming) coats on metal.

NOTE 1.—In nearly all of the above formulas, except for priming coats on new wood, a mixture of one-third to one-half boiled linseed oil and the remainder raw linseed oil may be substituted for the raw oil, omitting the drier.

NOTE 2.—In using the mixing formulas read across the page on the horizontal line; for example, formula No. 9 reads thus:

60 pounds paste white lead,  
50 pounds paste zinc oxide,  
3 to 4 gallons raw linseed oil,  
1½ to 3½ gallons turpentine,  
2 to 3 pints drier.  
7 to 8½ gallons of paint, for finish coats, outside.

Exhibit 6.B: 1924 United States Government specifications for mixing components of paint.

In addition to its use in paint manufacturing, lead was historically added to varnishes as a drying agent. “The Influence of lead Ions on the Drying of Oils” by Charles Tumosa and Marion Mecklenburg (published by the Smithsonian Center for Materials Research and Education)) addresses both lead pigments in paint and the use of “lead compounds...(to)...alter the drying behavior and physical properties of oil paints and varnishes.” (See Exhibit 79). The article indicates that by the late nineteenth to early twentieth century, manufacturers found that a combination of cobalt, manganese, and lead compounds was efficient to cause drying and polymerization in oils. The 1923 PPG publication “Glass, Paints, Varnishes and Brushes, Their History, Manufacture and Use (copyright 1923 Pittsburgh Plate Glass Company)” states that “An extensive variety of varnishes can be made by changing the operations, the gums, the oils, and the driers used ... When the gums, oil, and metallic drying salts have been properly combined...” (See Exhibit 810.A., “Paint Section, The Manufacture of Varnish,” at 23). Based on this information, it is likely that

Formatted: Not Highlight

Commented [FD77]: Include as a reference

Commented [J78R77]: Will do

Formatted: Not Highlight

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

PPG also added lead to varnishes as a drying agent, as it was common practice within the industry at the time.

~~In addition, an~~ During the manufacturing of the paints and varnishes at the Site, it is probable that the lead-containing material contaminated the surface and subsurface soils (including fill material) from accidental spills and discharges as stated in the RI Report (See Exhibit 4.A. at pg. 7-1). An article titled "Power Plant in the Patton Paint Co., Newark, N.J." in the October 15, 1903 issue of *The Engineer* (See Exhibits 911.A. and 911.B.) ~~states~~ states that there were two motors used to drive lead chasers at the facility, "pieces of apparatus in which white lead, the foundation for all of a certain class of paints, is worked and freed of its contained moisture." Motors at the plant were "housed to protect them from the powdered white lead and dust which is very apt to be floating in the air ... A 7-horsepower motor ... drives an air compressor ... used to blow dust out of motor armatures, etc ..." Historical Patton/PPG plant housekeeping activities (such as floor cleaning and sweeping) likely released the powdered white lead pigment to surface soil/fill material, specifically since most buildings were constructed with drains and wall slots with hinged flappers at floor level to allow discharge of sweepings/floor washings to outside the building. The photo immediately below (See Exhibit 9.C.12, picture, embedded below) shows a floor flapper at Building #7 at the Site (See Exhibit 10.A4.B, at Figure 2-1 for map of the Site). Elevated concentrations of lead (greater than 800 mg/kg) have been detected in soil immediately outside Building #7.



Exhibit 9.C.12: Photograph of floor flapper on Building #7

Below is a photograph of the Patton facility from the book "Glass, Paints, Varnishes and Brushes, Their History, Manufacture and Use (copyright 1923 Pittsburgh Plate Glass Company)" (See Exhibit 8.A.10.B., figure, embedded below). The photo depicts Building #9 and Building #6 (looking northeast) on page 24 of its "Paint Section<sup>23</sup>." Building #7A is also shown on the right side of the picture; Building #7A would eventually be replaced by the current Building #7. Note

**Exemption 5, Deliberative, Attorney-Client**

Commented [J81]: Add as reference

Formatted: Not Highlight

Commented [FD82]: Include as a reference and provide a link if possible

Commented [J83R82]: Will do

**Exemption 5, Deliberative, Attorney-Client**

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Commented [FD86]: Accurate? Please edit as needed.

**Exemption 5, Deliberative, Attorney-Client**

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

that barrels and various materials are stored on the ground in front of the buildings. These ~~building~~ buildings border Lot 63/64, where the focused lead removal is proposed to occur, and Building #7 is on Lot 63. (Note that Lot 63 is one of 15 lots on the Site, (See Exhibit 10.B., the RI Report, at 1-3 through 1-30) for report has more information regarding current and historical operations for each lots). [See Exhibit 4.A., at 1-3 through 1-30]].

Commented [FD88]: Is this the picture below?

Commented [J89R88]: Added reference to figure

Formatted: Not Highlight

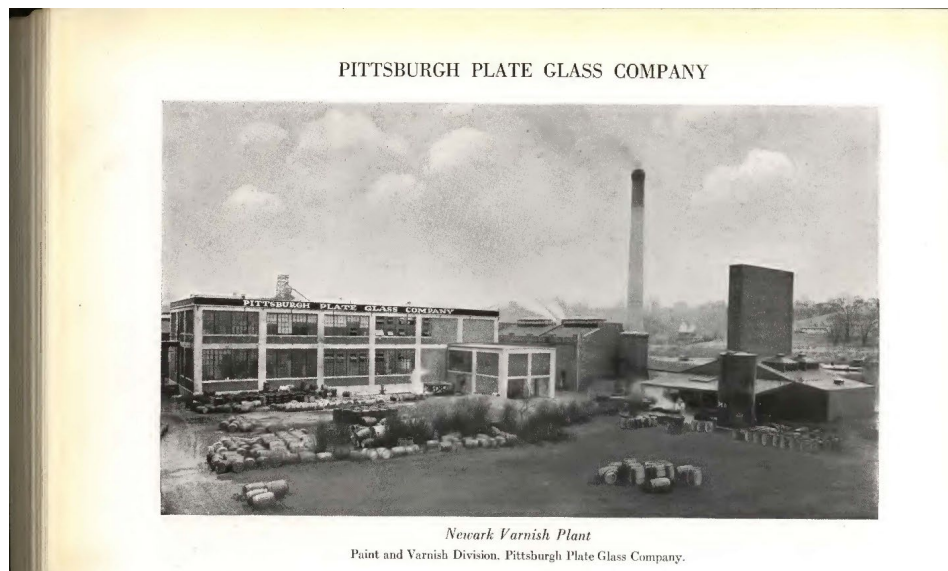


Exhibit 8A-10.B.: PPG paint manufacturing plant in City of Newark, New Jersey (now the Site)

Formatted: Not Highlight

Formatted: Not Highlight

The facility operations discussed above support the conclusion that lead and zinc were released into the soil/fill material as a result of paint and varnish plant housekeeping activities, along with incidental releases of white lead and zinc oxide pigments during material storage, handling, and transfer. The likelihood that PPG operations are a source of lead contamination in Site soil also is supported by a positive correlation between lead and zinc in the soil/fill material samples collected during the RI, with a linear regression coefficient of  $R^2$  of 0.72. The highest reported levels of lead in the RI borings are reported on Lots 63 and 64, and are correlated with the highest levels of zinc (refer to the cluster of green and light brown points on the right side of the graphic, see Exhibit 11.13, figure, embedded below), strongly suggesting that historical facility operations are a primary source of lead and zinc at this location these locations.

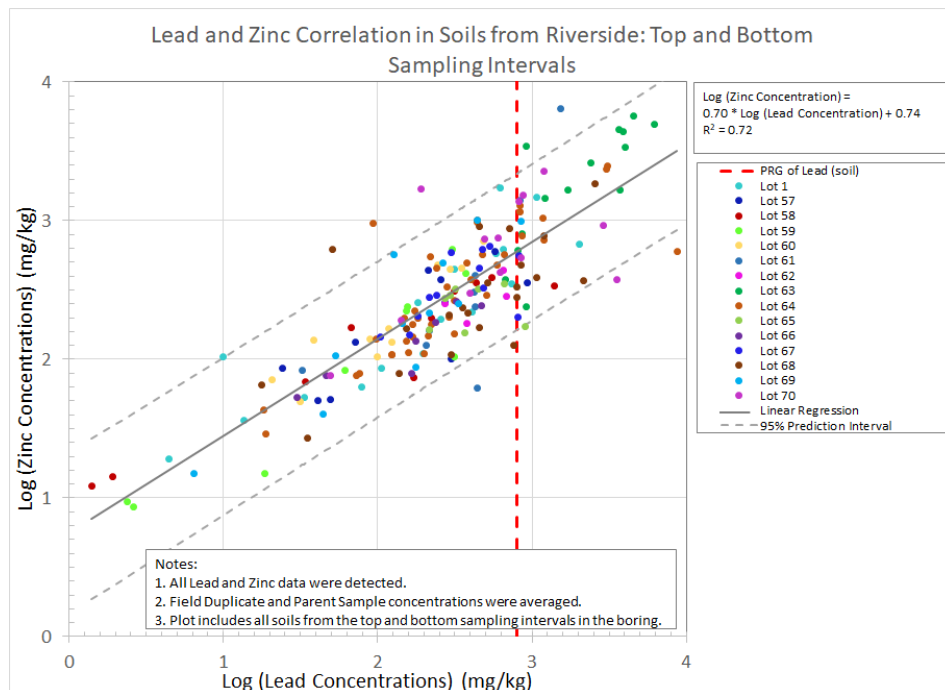
Commented [FD90]: Should this be PPG?

Commented [J91R90]: I agree, changed to PPG

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight



*Exhibit 4413: Lead and Zinc Correlation in Soil/Fill Material from Riverside (all samples)*

Formatted: Not Highlight

There also is evidence that Patton disposed of paint waste and other materials directly into the Passaic River adjacent to the Site. As noted in the RI Report on page 1-5 [*Id.*], the U.S. Army Corps of Engineers (“USACE”) alleged on February 1, 1915 that Patton of Newark dumped ashes, tin cans, waste paint material, and “refuse of various sorts” into the Passaic River, “for a length of 175 feet along the water front and had filled out for a considerable distance beyond the State riparian lines without any protection in the form of a bulkhead or retaining wall to prevent the escape of the material into the channel of the river.” [The Annual Reports, War Department, Fiscal Year Ended June 30, 1916, Report of the Chief of Engineers of the U.S. Army (Government Printing Office, Washington, DC, 1916) indicates that “the Patton defendants” pleaded guilty to the charge on October 11, 1915 and were sentenced to pay a fine of \$250 (Case No. 255).

**Exemption 5, Deliberative, Attorney-Client**

PPG argues that the Site data do not support Region 2’s CSM. However, not only does the documentary evidence discussed above support the CSM, but when combined with the Site data, a compelling ~~picture~~ emerges that PPG’s ~~historie Site~~ historical operations are a significant source of soil ~~and groundwater~~ contamination at the Site. Conversely, PPG has virtually no documentary evidence with regard to its operations at the Site to support its position. In particular, in PPG’s responses to the Region’s information requests regarding PPG’s historic site operations, PPG claimed to not have specific information. For example, in PPG’s 1996 response it stated that “[it] ha[d] no ~~basis available on which to estimate quantities of hazardous substances generated by [the] facility~~” (See Exhibit 14 at 7) and in its 2010 response PPG stated that “[it had] no information

Formatted: No underline

specifying which raw materials were used at the Site, where it was used, the time frame(s) it was used and the quantity of each raw material used” (Exhibit —15 at PPGNWK00117-00120); and it 7). Further, in its 2010 response PPG stated that it “[h]as been unable to ascertain whether buildings 7 [sic] and 12 were paint (or varnish) manufacturing buildings or which did not have “any specific products, if any were processed there” and that “PPG ha[d] no information to determine whether” with regard to: “[t]he quantities of any of residues or by-products generated as a result the materials identified in [its] 1996 Response were ‘received, manufactured, released or manufacturing processes or any changes in the chemical constituents of each over time’ [Id. at 11], nor ‘how residues, by products, and off-spec products were disposed of at the Site’... and had “no information that any” [Id. at 12]; nor what process were used to treat [its] waste at the Site” [Id.], nor any specifics about when, where, what type of hazardous substance from the Site was take off waste and what quantities were taken off site by a hauler or transporter...” (emphasis added) for disposal (See Exhibit —15 at —, —, —) 13).

Commented [SJ94]: I don't have this exhibit

Formatted: Not Highlight

Formatted: Font: Not Italic

Commented [SJ95]: I don't have this exhibit

Formatted: Not Highlight

This lack of information regarding its operations/disposal is noteworthy because when Patton/PPG began operations in 1903 the early 1900s it was “the largest paint factory in the world” (Bernardsville News, Bernardsville, NJ, January 27, 1903), “employed 200 people with “[t]he output being over 6,000 gallons [of paint] per day” (Exhibit —, Pittsburgh Press) 8), “to supply the eastern trade with trade with the ‘Sun Proof’ paint line” (See Exhibits 911.A. and 911.B., which.). This paint line, as discussed in Section II.A. above previously, was known for its high content of lead, and PPG operated at the Site in this regard for nearly 70 years of manufacturing lead-based paint. Yet it has been EPA that has had to gather nearly all historical information about the PPG’s historic operations at the Site. Relying on its lack of documentary evidence, PPG downplays the likely correlation of its large scale, long term operations at the Site to the elevated levels of lead in the soil and groundwater and instead focuses on historic fill as a source of contamination. In contrast, the Region’s abundance of evidence described above concerning the magnitude, scale, longevity, and inherently dirty operations of the PPG facility, with no clearly identified documented off-site disposal, together with the data analysis discussed below, establish that PPG is contributed the predominant source of the Site-wide lead contamination. Yet, even without the Region’s documentary evidence, the Region’s Site data analysis, discussed in detail, below, compellingly demonstrates that the Region’s CSM is consistent with the data presented in the RI Report.

Commented [SJ96]: I only have ‘Patton paint The Pittsburgh Press, August 27, 1902’. Do we have more to cite?

Formatted: Not Highlight

Formatted: Not Highlight

#### B. Region 2’s CSM is Supported by the Site Data

Once released into the environment, the lead carbonate and other lead-based compounds would be available to mix with the surface soil/fill material and infiltrate into the subsurface and shallow groundwater during precipitation events, potentially causing “top-down” contamination wherever these compounds were released or otherwise present in the environment. This This pathway is consistent with the soil-to-groundwater pathway in the RI Report’s discussion of potential migration pathways (See Exhibit 104.A. at pg. 5-1), which states that “Impacts from soils or potential site source areas would be expected to enter the unsaturated zone (shallow fill unit) and based on the nature of the release may reach groundwater which has an average depth of 5.1 feet bgs (below ground surface) across the Site.” The RI Report also states that “It should be noted that in complex mixtures such as groundwater, the effective solubility of individual compounds

**Exemption 5, Deliberative, Attorney-Client**

Commented [SJ98R97]: Agree with edit to the title

I moved this portion to the previous section.

**Exemption 5, Deliberative, Attorney-Client**

Formatted: Not Highlight

Formatted: Not Highlight



will differ significantly from the pure compound solubility.” [Id.] Depending on pH and ligand concentrations, lead-containing solids such as lead carbonate (cerussite,  $\text{PbCO}_3$ ), hydrocerussite [ $\text{Pb}_3(\text{OH})_2(\text{CO}_3)_2$ ], and anglesite ( $\text{PbSO}_4$ ) may control the aqueous concentrations of lead in groundwater; the ultimate fate and transport of dissolved-phase lead will be dependent on the geochemistry of the aquifer over time. Dissolved lead could also adsorb to the surfaces of other solids in the soil/fill material and underlying aquifer, resulting in a source of lead from adsorption/desorption reactions.

As presented in RI Report Figure 4-16, lead concentrations greater than 800 mg/kg are reported in surface and subsurface soil/fill material across the Site, with a cluster of comparatively elevated lead concentrations primarily detected in samples collected around the perimeter of Building #7 (See Exhibit 10.A.4.B, at figure 4-16). Elevated total lead concentrations in the shallow fill groundwater were also detected in samples from monitoring wells on Lots 63 and 64, and primarily within the vicinity of Building #7 (See Exhibit 10.A.4.B, at Figure 4-40). The soil/fill material with elevated lead concentrations (greater than 800 mg/kg) acts as a source material to the shallow groundwater in this area. Assuming 800 mg/kg for lead in the soils/fill, and a partitioning coefficient or log Kd value values<sup>4</sup> for lead ranging from 3.7 to 5, possible aqueous dissolved-phase lead concentrations are in the range from 0.0088 to 0.15 mg/L. LeadTotal lead concentrations in groundwater were found to be greater than 0.005 mg/L across the Site and as high as 0.1 mg/L. This demonstrates that lead contamination in soil/fill, which was impacted by past operations, likely migrated to the shallow groundwater considering recognizing that lead concentrations in the soil/fill was found to be reported at levels much higher greater than 800 mg/kg.

Region 2’s CSM is based on available Site data and the RI, which suggests a “top down” source of contamination due to historical operations by PPG as well as current commercial and industrial Site activities, including operations conducted on Lot 70. The fact that historic fill material may also be a source of lead does not change the fact that both Site data and historical Site operations point to past and current facility operations as a being a major source of lead in shallow groundwater and soil at the Site. Elevated lead in the soil/fill material due to past and current operations is the source of lead contamination to the shallow groundwater, and that the lead (dissolved-phase and solid phase) is transported in the groundwater.

PPG argues that the RI Report “identified historic fill, which is present in surface and subsurface soils across the Site, as the dominant source of lead in groundwater,” (Dispute, p. 7), but the RI Report does not support this statement.<sup>5</sup> The phrase “dominant source of lead in groundwater” does not appear in the RI Report, and the term “source of lead” only appears once, in a discussion of lead concentrations in soil/fill material on Lot 1 (not groundwater) (See Exhibit 10.A.4.B, at figure 4-16). The RI Report states that “[t]he source of lead is likely historic fill because lead was not documented to be used in Building #1 or Lot 1.” [Id.] The lead concentration in borings B-5 and B-96 (borings located next to Building #1 and not adjacent to another buildings) ranged from

<sup>4</sup> Kd value is a partitioning coefficient, also known as the sorption distribution coefficient, which is the ratio of sorbed metal concentration (expressed in mg metal per kg sorbing material) to the dissolved metal concentration (expressed in mg metal per L of solution) at equilibrium.

<sup>5</sup> PPG similarly states on page 8 of the Dispute that “USEPA’s FSR incorrectly treats lead in shallow groundwater as attributable to Site operations, when in fact it is a background level and attributable to historic fill.”

**Exemption 5, Deliberative,  
Attorney-Client**

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

**Exemption 5, Deliberative,  
Attorney-Client**

Formatted: Not Highlight

Formatted: Not Highlight

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

13.5 mg/kg to 254 mg/kg (at depths of 0.5-6.5 feet bgs), which are below the preliminary remedial goal (~~“(PRG)”~~) of 800 mg/kg. The cited sentence does not mention the paint manufacturing activities on the south side of the Site or Building #7, where elevated lead concentrations up to 6,210 mg/kg were detected in RI boring B-30, 8,690 mg/kg in RI boring B-75, and 10,800 mg/kg in historical boring HF-2. Note that HF-2 was collected from below the water table in the saturated zone (11-12.5 feet bgs) and is 40-800 times higher than the lead concentrations observed on Lot 1. This comparison shows that the ~~analysis~~detection of lead contamination in Lot 1 cannot be applied site-wide. Consequently, the cited ~~discussion~~sentence from the RI Report cannot be extrapolated to the entire Site based on the known Site history, and the RI Report does not state or support the statement that historic fill material is the dominant source of lead contamination in groundwater. In short, PPG’s references to the RI Report text are not consistent with the actual findings in the RI Report.

To support its position that historic fill material is a dominant source of lead in shallow groundwater, PPG argues that “[a]s documented in the [RI Report] prepared by Woodard & Curran and approved by the Region, historic fill is present in surface and subsurface soils throughout the Site [RIR ES-2; 3-3.] As Region 2 is aware, historic fill in New Jersey commonly contains elevated levels of metals, including lead.” (Dispute, p. 7).

While the Region agrees that historic fill material may contain elevated metals concentrations, PPG has taken the cited discussion from the RI Report out of context and omits that the RI Report also recognized that once historic fill material is deposited it may be further contaminated by operations at the Site. The entire paragraph from the RI Report’s Executive Summary (See Exhibit ~~104~~.A. at pg. ES-2) states:

Based upon historical maps, previous investigations, and data obtained during the RI, fill material is present in surface soils throughout the Site and in subsurface soils where historical filling was conducted to reclaim land from the Passaic River. This material is considered “historic fill” as it complies with the NJDEP definition of historic fill. Historic fill *in some areas appears to have been impacted due to historical and/or current operations and chemical/waste handling at the Site.* The source of soil contaminants depends on area and contaminants and are likely due to historic fill, past/current operations (spills/releases), and illegal disposal. (emphasis added).

Contrary to PPG’s argument, the RI Report supports the Region’s determination, as incorporated into the CSM, that contamination at the Site resulted from past and current Site operations (including operations conducted on Lot 70) as well as historic fill and illegal disposal.

~~PPG cites NJDEP’s Historic Fill and Diffuse Anthropogenic Pollutants Technical Guidance, observing~~PPG also stated that “NJDEP has previously published data showing lead concentration levels in historic fill as ranging from an average of 574 ppm to a maximum of 10,700 ppm.”<sup>6</sup> ~~Lead~~<sup>7</sup> in reference to NJDEP’s Historic Fill and Diffuse Anthropogenic Pollutants Technical Guidance. However, this guidance has been superseded, and lead concentrations, ~~however~~, are not “diffuse” across the Site, ~~and the~~. The spatial distribution of detected lead concentrations

<sup>6</sup> [https://www.nj.gov/dep/srp/guidance/srra/historic\\_fill\\_guidance.pdf](https://www.nj.gov/dep/srp/guidance/srra/historic_fill_guidance.pdf)

<sup>7</sup> [https://www.nj.gov/dep/srp/guidance/srra/historic\\_fill\\_guidance.pdf](https://www.nj.gov/dep/srp/guidance/srra/historic_fill_guidance.pdf)

Exemption 5, Deliberative,  
Attorney-Client

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

(including the cluster of comparatively elevated lead concentrations around the perimeter of Building #7 that is correlated with elevated levels of zinc) suggest an additional source of lead to the soil/fill material that is associated with historical and current Site operations and not historic fill material.

The Technical Guidance cited by PPG has been superseded by NJDEP's "Historic Fill Material Technical Guidance" (April 29, 2013, Version 2.0). (See Exhibit 4216). In accordance with the Historic Fill Material Technical Guidance, "[t]he investigator may either remediate historic fill material under the assumption that it is contaminated or they may establish, via sampling, that the historic fill material is not contaminated above NJDEP's residential soil remediation standards, N.J.A.C. 7:26D-4." The guidance further states that "when contaminated historic fill material is encountered at a site that is required to conduct remediation pursuant to N.J.A.C. 7:26C-2, the person responsible for conducting remediation must remediate historic fill material consistent with the Technical Requirements and this guidance."<sup>8</sup> This updated guidance does not provide a range of lead concentrations for historic fill material. Moreover, ~~where contamination is found if evidence suggests that is not shown to be associated with~~ historic fill ~~material has been impacted by on-site operations~~, as is the case at the Site, the NJDEP guidance does not suggest that EPA should refrain from evaluating remedial alternatives that will address the risk associated with the contamination.

Formatted: Not Highlight

C. An Evaluation of Active Groundwater Alternatives that Address Lead in Groundwater was Appropriate for the FS

Presumably in an effort to discount the need for active groundwater alternatives ~~that to~~ treat lead in groundwater from the FS Report, PPG notes that "NJDEP permits parties to assume that groundwater associated with historic fill material is contaminated above groundwater remediation standards (5 micrograms per liter [µg/L] for lead) and implement a groundwater classification exception area [CEA] rather than active remediation." (See Exhibit 4216 at 8, 10~~4216~~.) Regardless of whether PPG believes that a CEA is an appropriate alternative for contaminated groundwater at the Site, the FS Report must evaluate remedial alternatives to provide a basis, along with other information in the administrative record file, upon which EPA can propose a remedy in a proposed plan, and it is therefore entirely appropriate for the FS Report to evaluate active groundwater remediation to achieve the remedial action objectives ~~(("RAOs"))~~ for groundwater.

Exemption 5, Deliberative, Attorney-Client

Formatted: Not Highlight

Formatted: Not Highlight

One of the RAOs in Region 2's Proposed Plan for groundwater at the Site is to minimize contaminants of concern ~~(("COC"))~~ concentrations and restore the groundwater quality. Due to the aquifer classification by NJDEP, the groundwater must be restored to Class IIA standards as required by the NCP. As discussed above and supported by the facts in the RI report, total lead in shallow groundwater is a ~~contaminant of concern~~ COC due to past and current industrial operations that have occurred at the Site, and Class IIA standards for total lead concentrations must be met. Under CERCLA, and the NCP, the remedial alternatives are required to meet the two threshold criteria of overall protection of human health and the environment and compliance with applicable or relevant and appropriate requirements ~~(("ARARs"))~~. CERCLA guidance provides that

Exemption 5, Deliberative, Attorney-Client

<sup>8</sup> It should be noted that the NJDEP "Historic Fill Material Technical Guidance" references a residential direct contact soil remediation standard of 400 mg/kg while the PRG for the Site is based on the non-residential direct contact soil remediation standard of 800 mg/kg.

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

institutional controls (“ICs”) “shall not substitute for active response measures ... as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy” [(refer to USEPA “Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites” (December 2012))]. Under the circumstances of the Site, the Region’s directions to PPG to screen out groundwater ~~alternative~~alternatives that rely solely on ICs ~~to address the contaminants of concern~~COC in shallow groundwater was an appropriate exercise of EPA’s discretion and consistent with EPA’s guidance.

Formatted: Not Highlight

**Exemption 5, Deliberative,  
Attorney-Client**

- D. Groundwater Alternative 5 was not ~~ana~~ Viable Remedial Alternative for the Site and it was not Arbitrary and Capricious for this Alternative to be Screened Out

PPG asserts that the Region’s July 10 revisions to the FS Report “reject appropriate alternatives (i.e., Groundwater Alternative 5 presented in the June 30, 2020 draft of the FSR) and retain inappropriate groundwater alternatives by evaluating how they address lead in Site groundwater.” (Dispute, p. 8). Contrary to PPG’s assertion, however, Groundwater Alternative 5 would not achieve the groundwater RAOs at the Site and would have likely ~~divert~~diverted shallow groundwater flow ~~and cause, causing~~ contaminants to be discharged from the Site into the Passaic River.

Groundwater Alternative 5, as proposed by PPG in the June 30, 2020 draft FS Report, focused solely on organic contaminants associated with the underground storage tanks on Lot 64 and did not actively address lead in groundwater. Based on Region 2’s comments, in the July 17, 2020 draft FS Report submitted by PPG, Groundwater Alternative 5 had been revised by PPG to address both organic contaminants on Lots 58 and 64 and lead-contaminated groundwater proximal to Building #7. In the July 17, 2020 draft FS Report Figure 5-10 (See Exhibit 13 17, figure, embedded below), as designed and proposed by PPG, the yellow shaded area targets shallow lead contaminated groundwater in the vicinity of Building #7.

Formatted: Not Highlight



~~Exhibit 13~~17: Groundwater Alternative 5 proposed by PPG in July 17, 2020 draft FS

**Formatted:** Not Highlight

While the revised Groundwater Alternative 5 was intended to address both organic contamination and **total** lead in shallow groundwater, the Region determined that this alternative would not be implementable and would not meet the goals of the proposed remedy because:

- The proposed alternative PPG's Groundwater Alternative 5 focused on in-situ remediation of groundwater contamination on Lots 63/64 and ~~Lot~~Lots 58/59. The remaining groundwater contamination across the Site would not be actively remediated and instead would be subject to Site-wide institutional controls (such as a groundwater ~~classification~~ exception area ~~CEA~~ or well restriction area). Consequently, ~~this~~ PPG's proposed alternative would not achieve the groundwater RAO to minimize COC concentrations and restore groundwater quality site-wide (consistent with a Class IIA aquifer), and it. Since the RAO would not be achieved, PPG's proposed alternative would not be able to meet the chemical-specific ARARs identified for groundwater, which are maximum contaminant limits ~~(“MCLs”)~~, and NJDEP New Jersey Groundwater Quality Standards for total lead in both the northern and southern portions of the site.
- The subsurface barrier wall proposed in Groundwater Alternative 5 ~~would require~~ was proposed without hydraulic control of contaminated groundwater ~~and hydrostatic~~ Hydrostatic relief behind such a containment structure is required to prevent groundwater head from building up behind the structure and driving groundwater and associated contaminants below and around the structure. As stated in PPG's June 30, 2020 draft FS Report (Section 5.3.5) when discussing Groundwater Alternative 5 and the barrier wall: “Based on the permeable nature of the fill, the preferred groundwater flow pathway would be a more southern path from current condition as the wall blocks east flow.” This southern

**Commented [FS119]:** Edited to be consistent with RAO (the language in parens is not part of the RAO).



movement would eventually continue to move east ~~when it reached~~ once the groundwater passed the end of the barrier; ~~as~~ As stated in the RI Report Section 3.4, the Passaic River is a regional discharge point for groundwater in the Newark, NJ area. Consequently, the barrier wall (without hydraulic controls) was unlikely to successfully prevent or effectively minimize interactions between the groundwater and the river or the ultimate discharge of contaminated groundwater to the river.

Commented [SJ120]: RAO says prevent 'or minimize' so I added this edit

It should be noted that Groundwater Alternative 4 (which is the Region's preferred alternative for groundwater) relies on periodic, focused in-situ remediation injections in conjunction with pump and treat. In-situ remediation technology was proposed in both Groundwater Alternative 4 and Groundwater Alternative 5 to address lead contamination in shallow groundwater. Groundwater Alternative 4, however, has more flexibility to implement the injections across the Site, where needed, beyond the focused area that would be addressed under Groundwater Alternative 5. With respect to the barrier wall, if the barrier wall was designed to include some form of engineering control (such as pumping) to provide hydrostatic relief, then the containment technology potentially would have been a viable option achieve the RAO of "[p]revent or minimize discharge of groundwater containing COCs to surface water to minimize the potential for interaction between the Site and the Passaic River." However, with the appropriate hydraulic controls for the barrier wall, the proposed Groundwater Alternative 5 would still not have met the RAO to restore groundwater quality site-wide (consistent with its status as a Class IIA aquifer) ~~because of its restricted focus on Lots 63/64 and 58/59~~, and it would not be able to achieve chemical-specific ARARs, since no active remedy would be applied to address groundwater contamination across the Site.

Commented [FD121]: Should this refer instead to the groundwater RAO which says, "Prevent or minimize discharge of groundwater containing COCs to surface water to minimize the potential for interaction between the Site and the Passaic River."?

Commented [J122R121]: Yes! Thanks!

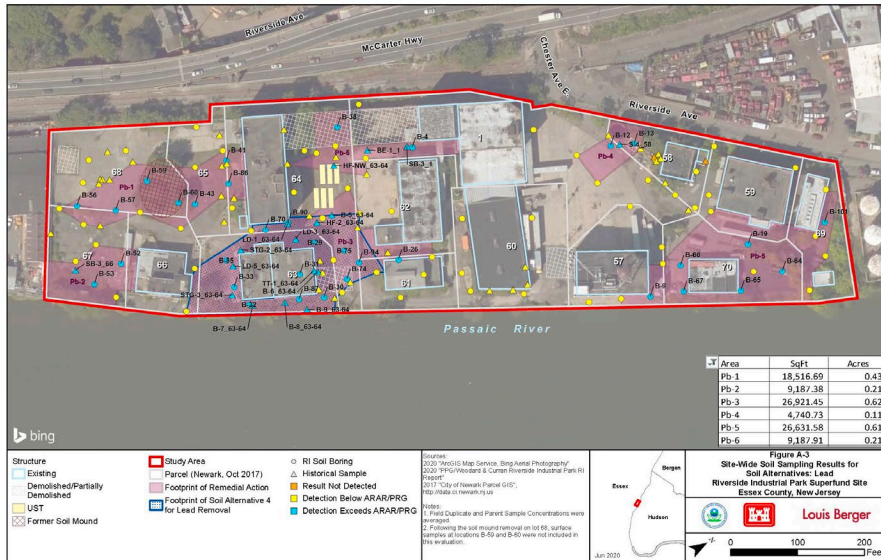
E. Lead Levels in Soil and Elevated Lead Levels in Groundwater are Spatially Correlated Near Building #7 and Other Locations at the Site

Commented [SM123]: Is this really "specially" and not actually "spatially"?

PPG incorrectly asserts that there is no spatial correlation between lead levels in soil and elevated total lead levels in groundwater. (Dispute, p. 8) A point-by-point spatial correlation between soil/fill material sample results and groundwater results cannot be undertaken at this Site because of the various groundwater gradients across the Site and lack of co-located samples collected. Co-located soil/fill material samples and shallow groundwater samples were mainly collected from the temporary well points; however, it was agreed between Region 2 and PPG that these samples were unvalidated screening samples that would be used only to design the monitoring well network. Consequently, no single soil sample can be compared to evaluate the presence or absence of total lead exceedances in a co-located groundwater sample. Instead, the cluster of soil/fill material exceedances around the perimeter of Building #7 represents the result of lead contamination related to historical PPG activities in that portion of the Site, and the consistent exceedances of total lead in groundwater samples collected from around Building #7 are consistent with the presence of a Site-related source of lead in soils (See Exhibit 418, figure, embedded below). Other clusters of soil exceedances are observed across the Site, particularly on Lot 70.

Formatted: Not Highlight

Formatted: Not Highlight



**Exhibit 18:** Figure A-3 from FS Report Appendix A showing delineated areas of lead in soil/fill material that exceed the PRG of 800 mg/kg and the footprint of lead removal around Building #7, which is part of EPA's Preferred Alternative for soil/fill material

Formatted: Not Highlight

In the Region's attempts to clarify for PPG the changes needed to the June 8 draft FS Report, ~~by the Region sent a letter, dated July 14, 2020, the Region corresponded (Exhibit 19), with PPG, addressing scientific reasoning for including lead in groundwater as a site related contaminants and technical reasoning for screening out groundwater alternative 5, to address issues that PPG did not understand or did not agree with. While a response to this letter was not required, PPG responded with a letter dated July 21, 2020 (See Exhibit 15)-20). PPG's arguments about the lack of spatial correlation are based on their analysis in its July 21 letter, but there are several technical errors in PPG's July 21 letter that render their point-by-point comparison inconclusive. The two major technical errors (as discussed below) are (1) inferring a causal relationship between downgradient soil/fill material and upgradient groundwater samples, and (2) mischaracterizing the actual soil/fill material samples and groundwater sample depths. These errors confound any attempt to draw conclusions from the data presentation submitted by PPG.~~

**Exemption 5, Deliberative, Attorney-Client**

Formatted: Not Highlight

~~In PPG's July 21 letter (See Exhibit 20). As stated in the RI Report (Section 3.4.1 on page 3-5), the groundwater movement is generally towards the east (towards the Passaic River) with "several local flow patterns that appear during both low and high tide including saddles, mounds, and a local flow direction to the northeast in the vicinity of Lot 58." In PPG's July 21 letter (See Exhibit 15), an attempt was made to compare soil/fill material and groundwater samples to demonstrate that elevated lead in soil/fill material could be found near relatively low-level concentrations of total lead in groundwater samples (See Exhibit 16, table, embedded below). PPG arbitrarily assigned soil borings to monitoring wells based on geographical distance without considering the local hydrology. This evaluation is flawed because it includes side-gradient and downgradient soil~~

Formatted: Not Highlight

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

borings that would not impact lead concentrations detected in side-gradient and upgradient monitoring wells. As stated in the RI Report (Section 3.4.1 on page 3-5), the groundwater movement is generally towards the east (towards the Passaic River) with “several local flow patterns that appear during both low and high tide including saddles, mounds, and a local flow direction to the northeast in the vicinity of Lot 58.” The table below lists the monitoring wells and the “nearest soil boring” assigned by PPG in the July 21 letter--; note that soil borings positioned downgradient or side-gradient relative to a monitoring well would not have an effect on the groundwater contaminant concentrations. Shallow groundwater gradients are based on the piezometer surface maps presented in RI Figures 2-5 through 2-10.

*Exhibit 4621: Comments on PPG Table 1 of PPG July 21 Letter*

July 21 Table Reference	Monitoring Well Identified by PPG	“Nearest Soil Locations” Selected by PPG	Comments on Shallow Groundwater Gradients and Soil Boring Locations
PPG Table 1	E1	B-59 and B-77	Gradient is south-to-southeast depending on tides. B-77 is <b>side-gradient</b> to E-1 during high tide and low tide. B-59 is <b>upgradient</b> (refer to discussion below on B-59).
PPG Table 1	E6 and E7	B-4	Gradient is north-to-east depending on tides. B-4 is <b>downgradient</b> from E-6 during high tide and low tide. B-4 is spatially co-located with E-7.
PPG Table 1	MW-114	B-12 and B-13	Gradient is north-to-east depending on tides. B-13 is <b>downgradient</b> from MW-114 during high tide and low tide. B-12 is <b>upgradient</b> .
PPG Table 1	MW-123	B-56, B-57, and B-82	Gradient is southeast-to-south depending on tides. B-57 and B-82 are <b>side-gradient</b> and B-56 is <b>downgradient</b> during high tide and low tide.
PPG Table 1	MW-103	B-51, B-52, and B-53	Gradient is southeast. B-51 and B-53 are <b>side-gradient</b> during high tide and low tide. B-52 is <b>upgradient</b> .
PPG Table 1	MW-105	B-38	Gradient is north. B-38 is spatially co-located with MW-105; however, lead in the saturated zone is not characterized.
PPG Table 1	MW-106	B-35, B-36, B-37, and B-91	MW-106 is located on a groundwater mound. Groundwater gradient is radial.
PPG Table 1	MW-120	B-61, B-62, and B-101*	Gradient is either north, east, or west depending on tide. B-61 and B-62 may be upgradient under certain tidal conditions.

Formatted: Not Highlight

\* PPG assigned boring B-101 as the “nearest boring” to MW-120 in PPG Table 1 in the July 21 letter. The boring assignment was shifted from MW-120 to MW-122 in PPG Table 3.

As another example, PPG attempted to draw a point-by-point comparison between the low-level total lead concentrations detected in well E-1 with two nearby soil borings (B-77 and B-59). PPG argues that low-level total lead concentrations in well E-1 were not commensurate with the nearby elevated lead concentrations in the nearby soil/fill material, in an attempt to disprove a relationship between lead contamination in soils and groundwater. ~~Boring~~Only boring B-59 is upgradient of

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

well E-1; however, PPG's data evaluation (refer to Figure A in the July 21 letter) comparing borings B-59 and well E-1 contains errors, as described in the bullet items below, leading to flawed findings:

- (1) PPG uses a temporary well point sample (TWP-B-59), which is an unvalidated screening point.
- (2) PPG plots the groundwater samples at a depth of approximately 6-7 feet bgs, which according to the Woodard & Curran field notes, is actually the depth to water from the top of the well casing. Groundwater samples were collected at the pump intake, which was approximately 10 feet below top of casing (refer to RI Appendix G).
- (3) PPG plots a soil sample [B-59(FILL)100317] representing the above-ground debris pile (3 feet above ground) incorrectly at depth in the subsurface at 3 feet bgs.
- (4) PPG plots both a subsurface sample [B-59(5-7)100317] and its field duplicate with an incorrect depth. Note that this sample was collected at 2-4 feet bgs, according to Woodard & Curran field notes and database entry. The sample ID of 5-7 feet bgs is incorrect, according to Woodard & Curran. When correctly plotted, this point is above the E-1 well screen.
- (5) PPG plots a subsurface sample [B-59(12-13.5)100317] with an incorrect depth. Note that this sample was collected at 9-10.5 feet bgs according to Woodard & Curran field notes and database entry. The sample ID of 12-13.5 feet bgs is incorrect, according to Woodard & Curran.

When these errors are corrected, the detected total lead concentrations in E-1 groundwater samples collected at 10 feet below the top of well casing (maximum total lead concentration of 1.3 ug/L) are commensurate with the one spatially comparable soil/fill material sample collected in the nearby boring B-59, at a depth of 9.0-10.5 feet bgs, with a relatively low-level detected lead concentration of 34.9 mg/kg. The data therefore do not support PPG's position that low-level total lead concentrations in well E-1 were unrelated to the elevated lead concentrations in the nearby soil/fill material.

Note that similar technical errors were found in the remaining figures generated by PPG and provided in its July 21 letter.

F. Lead Concentrations in the Northern Portion of the Site do not Indicate that Lead in Groundwater at the Site is Attributable to Historic Fill

Once released into the environment, lead-based compounds would be available to mix with the surface soil/fill material and infiltrate into the subsurface and shallow groundwater during precipitation events, potentially causing "top-down" contamination wherever these compounds were released or otherwise present in the environment. As discussed above, there is a substantial amount of lead contamination in the soil/fill around Building #7 in the southern portion of the Site. While lead contamination in the northern portion of the site is not as substantial in comparison to the southern portion, the soil/fill material on the northern portion of the Site still has been impacted from lead contamination, specifically from operations on Lot 70.<sup>9</sup> PPG argues that "[The Region]

<sup>9</sup> Federal Refining Company occupied Lot 70 and was a scrap metal recycler specializing in recovery of precious metals.

Commented [SJ125]: See edit

Commented [SM126]: Thanks.

Commented [FD127]: This clause isn't clear.

Commented [J128R127]: Seems okay to me. bgs means below ground surface. Maybe this is the confusion?

presents the northern portion of the Site as an area that ‘has not been substantially impacted by lead contamination.’ ... While it is accurate that Site operations in the northern portion of the Site did not involve lead, lead is present in all media” (Dispute, pp. 8-9). PPG then draws conclusions about the presence of lead on the remainder of the Site based on conditions found on the northern portion.

**Exemption 5, Deliberative,  
Attorney-Client**

however, the data do not support PPG’s contention that, based on conditions in the northern portion of the Site, lead in shallow groundwater throughout the Site is attributable to historic fill material.

**Commented [FS129]:** This appears at the end of this section, but I was getting distracted as I read through, and felt like it would be helpful to state this up front to focus the reader’s attention during this long, technical discussion.

**Exemption 5, Deliberative, Attorney-Client**

s noted in the RI Report, “Historic fill in some areas appears to have been impacted due to historical and/or current operations and chemical/waste handling at the Site. The source of soil contaminants depends on area and contaminants and are likely due to historic fill, past/current operations (spills/releases), and illegal disposal” (See Exhibit 10.B.4.A., at ES-2). Consistent with this statement, in the northern section of the Site, there are some areas have not been as significantly impacted by lead contamination, while other areas on the northern section of the Site have been impacted by placement of historic fill material and by both past and current operations, including operations conducted on Lot 70.

**Formatted:** Not Highlight

**Formatted:** Not Highlight

**Formatted:** Not Highlight

For example, one area in the northern section of the Site that has not been as substantially impacted by placement of historic fill material containing lead is in the northwest corner. As stated in the RI Report:

Fill material is documented at the surface throughout the Site with greater fill thicknesses associated with areas reclaimed from the Passaic River. The majority of the Site (except the northwest section) was reclaimed from the Passaic River with imported fill, which is described as a Loamy Sand or Sand Loam. Below the fill material, the next deeper layer that makes up the geology immediately under the Site is a silt loam, representing the former Passaic River sediment bed. Consistent with historical maps of shoreline development (Figure 1-3), this layer was not identified in borings on the northwest side of the Site, where less shoreline modifications occurred. (Exhibit 10.A., RI Report at 3-3).

**Exemption 5, Deliberative,  
Attorney-Client**

**Exemption 5, Deliberative,  
Attorney-Client**



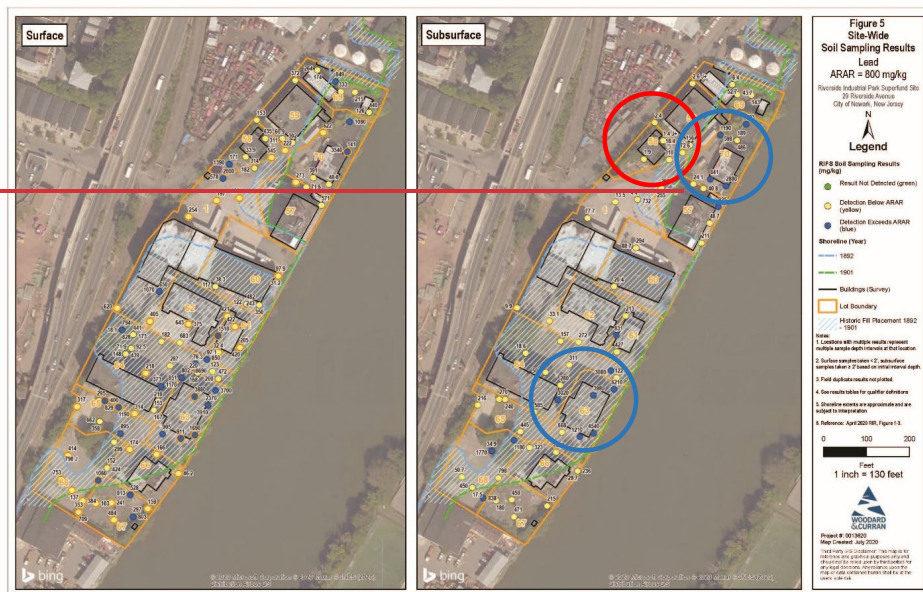


Exhibit 17: Figure 5 from PPG's July 21 Letter. Red circle added to emphasize northwest corner of Site and subsurface soils west of the 1873 shoreline. Clusters of elevated lead concentrations around Building #7 and on Lot 70 are evident in figure (blue circles). Note that Exhibit 17 only displays RI borings whereas Exhibit 14 displays RI borings and historical borings.

Commented [FD133]: We'll need to check the exhibit numbers before we finalize

Commented [J134R133]: I can do that

Commented [FS135]: Should the be pre-1892?

**Exemption 5, Deliberative,  
Attorney-Client**

Overall, with the exception of MW-118 (which has been impacted by Building #10 operations; refer to FS Report Section 3.5.5), the shallow groundwater on the northern side of the Site has not been as substantially impacted by lead contamination when compared to the southern portion of the Site, recognizing that the deep groundwater total lead concentration is approximately 2.0 ug/L. The table below (See Exhibit 1822, table, - embedded below, - reports) summarizes the maximum total lead concentration per shallow monitoring well (non-detected total lead concentrations are presented at the laboratory reporting limit of 1 ug/L) on the northern portion of the Site (excluding

Formatted: Not Highlight

MW-118).) There are ~~four~~five wells on the northern section of the Site with maximum total lead concentrations greater than the PRG of 5 ug/L. Monitoring wells MW-117 and MW-120 have elevated total lead concentrations that are three times greater than the PRG of 5 ug/L. Lead contamination in these two wells is discussed below:

- Groundwater movement near MW-120 (~~which is in the north section of the Site~~) is affected by the groundwater mound or ridge centered on Lot 70, causing gradients to shift at MW-120 from east to north to west. In either case, soil/fill material from Lot 70 is located upgradient. (Shallow groundwater gradients are based on the piezometric surface maps presented in RI Figures 2-5 through 2-10; See Exhibit 10.B.) According to the RI Report on page 1-8, the company Federal Refining Company operated on Lot 70 since 1985, recycling precious metals. “The metal recovery process involved meltdown of scrap metal and recovery of metal using various acidic and caustic liquids.” As part of actions taken pursuant to the NJDEP Site Remediation Program, soil/fill materials were excavated in 2012 and an asphalt cap placed over the property in 2014. Post-excavation samples indicated elevated lead levels (over 800 mg/kg) remain under the asphalt cap, which were verified during the RI, and may be acting as a source of lead contamination to MW-120.
- Groundwater movement near MW-117 (~~in the north section of the Site~~) is also affected by the groundwater mound or ridge centered on Lot 70 ~~and extending to the south~~, bifurcating groundwater movement between MW-117 and MW-114. MW-117 is downgradient of multiple potential soil/fill material sources. The tidal communication with MW-114 is noted in the RI Report in Section 3.4.3 under the tidal evaluation.

**Commented [FS136]:** I think this means the groundwater mound or ridge is extending to the south, but if not, please clarify what it is that extends to the south.

Exhibit 1822: Maximum Total Lead Concentration in Monitoring Wells on North Side of Site

**Formatted:** Not Highlight

Monitoring Well Number on the North Side of the Site	Maximum Total Lead Concentration (ug/L) Reported for Three Sampling Events over 11-month Period
E-4	7.4
E-5	1.4
E-6	3.3
E-7	2.0
E-8	1.0
MW-114	1.0
MW-115	1.0
MW-116	2.0
MW-117	17.7
MW-119	7.9
MW-120	25.3
MW-121	4.2
MW-122	7.0
MW-124	1.0

In contrast, on the southern portion of the Site, a cluster of elevated total lead concentrations (in particular at MW-107, MW-108, and MW-110) were detected in the vicinity of Building #7, where

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

~~soils contain lead from Site operations and contaminated soil/fill material acts as a source material to shallow groundwater continuously moves to the east southeast during high tide and low tide~~ (See Exhibit ~~19~~23, table embedded below). ~~Some~~It is noted that some areas of the southern portion of the Site have shallow groundwater concentrations similar to the northern section, which is to be expected since not all areas of the Site were impacted similarly by past/current operations and lead-contaminated soils (at levels greater than 800 mg/kg) were not reported across the Site. However, based on the available soil and groundwater data, the lead contamination in the shallow groundwater is associated with the lead-contaminated soils, which is a Site-related contaminant.

Formatted: Not Highlight

Exhibit 1923: Maximum Total Lead Concentration in Monitoring Wells on South Side of Site

Monitoring Well Number on the South Side of the Site	Maximum Total Lead Concentration (ug/L) Reported for Three Sampling Events over 11-month Period
E-1	1.3
E-2	3.7
E-3	2.1
MW-101	1.0
MW-102	12.8
MW-103	18.7
MW-104	10.4
MW-105	45.2 *
MW-106	26.5 (near Building #7)
MW-107	54.2 (near Building #7)
MW-108	109 (near Building #7)
MW-109	20.85 * (near Building #7)
MW-110	39.9 (near Building #7)
MW-111	14.6 (near Building #7)
MW-112	8.2
MW-123	1.2
* Average of field sample and duplicate	

Exemption 5, Deliberative, Attorney-Client

Formatted: Not Highlight

Site groundwater data (all events) are plotted below in two Pareto Charts (See Exhibits ~~20~~24 and ~~21~~25, figures, embedded below), which show the frequency and magnitude of lead detections in groundwater in descending magnitude (left to right), as well as their cumulative impact (orange line) plotted against the secondary (right) axis ranging from 0 percent when the first sample is examined and extending to 100 percent when the last sample is examined. For monitoring wells located on the north side of the Site, about half of the cumulative total lead detected in three rounds of sampling was in samples from MW-120 and MW-117 (refer to discussion above on MW-120 and MW-117), with only 25 percent of all samples exceeding 5 ug/L of total lead, and the remaining 75 percent of samples below the total lead PRG of 5 ug/L (also see table below). In contrast, in the southern portion of the Site ~~where historic evidence supports that lead-based paint manufacturing was conducted~~, about half of the cumulative total lead detected in three rounds of sampling was in MW-105, MW-107, MW-108, and MW-110, with 56 percent of all samples

Formatted: Not Highlight

Exemption 5, Deliberative, Attorney-Client

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

exceeding the PRG for total lead (also see table below).<sup>10</sup> Again, these These charts demonstrate the significant differences between the northern and southern portions of the Site, such that developing broad conclusions site-wide conclusions using either the northern or southern portions is not appropriate. Elevated However, since groundwater total lead concentrations greater than the PRG of 5 ug/L were reported on both the northern and southern portion of the Site, which are correlated to areas where lead was likely released as a result of current or past operations, an active groundwater remedy is required site-wide.

**Exemption 5, Deliberative,  
Attorney-Client**

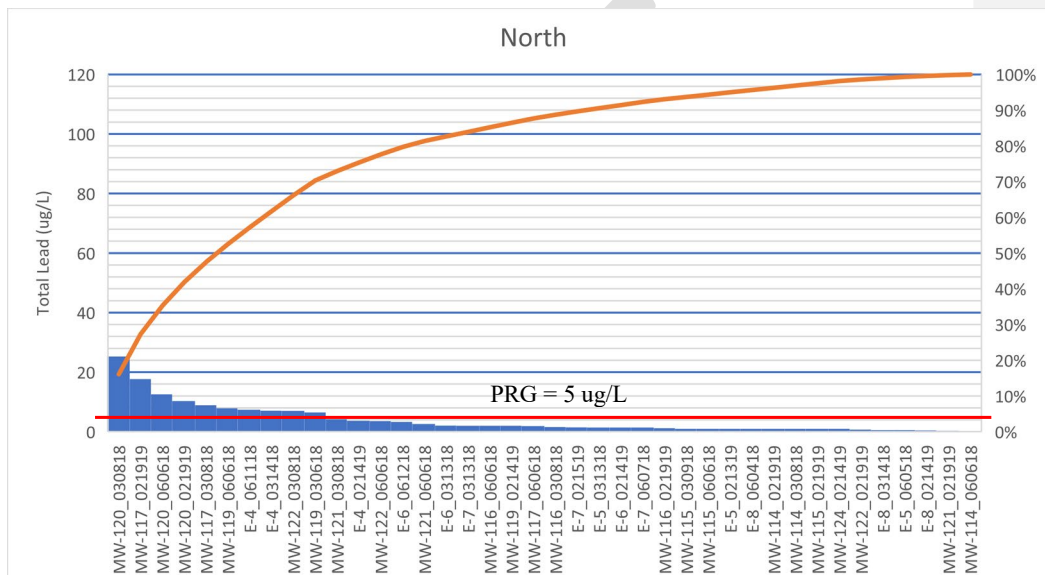


Exhibit 24: Pareto (frequency) Chart for Total Lead Concentrations in Monitoring Wells on the North Side of Site

Formatted: Not Highlight

<sup>10</sup> MW-107, MW-108, and MW-110 are located around the perimeter of Building #7.

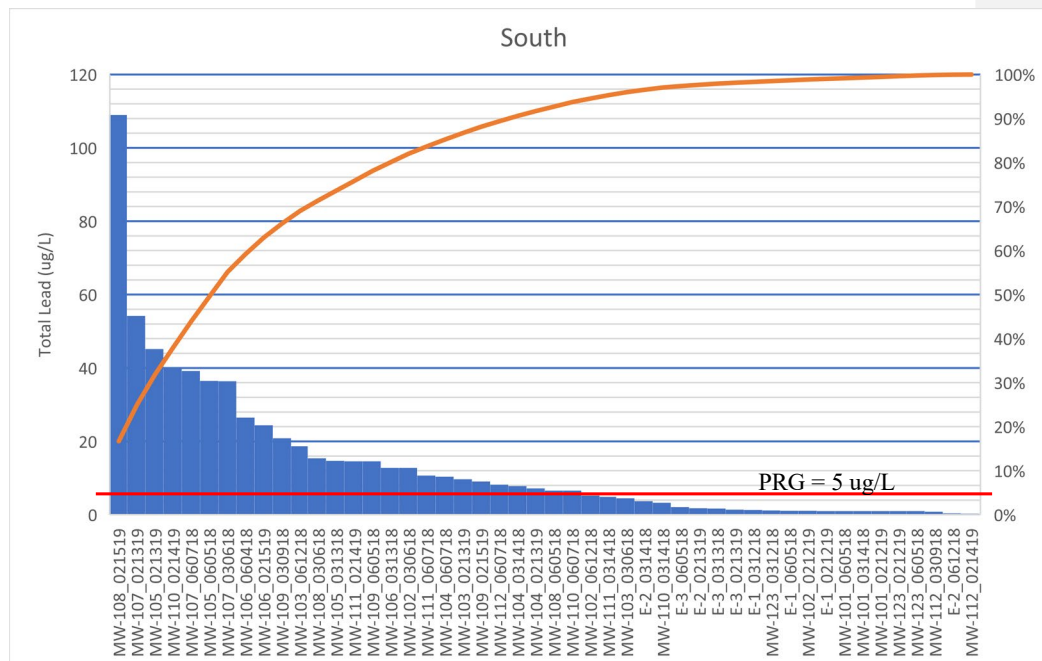


Exhibit 24.25: Pareto (frequency) Chart for Total Lead Concentrations in Monitoring Wells on the North Side of Site

An alternate way of presenting the same data is to report the percentage of groundwater samples that exceed a specific concentration. As shown in the table below (See [Exhibit 2226](#), table, embedded below), a groundwater sample on the south side of the Site was approximately two times more likely to exceed the PRG (5 ug/L) for total lead than a groundwater sample from the north, and a sample from the south is eight times more likely to exceed 20 ug/L than a sample from the North.

**Exhibit 226: Percent of Groundwater Samples Exceeding a Specific Concentration**

Total Lead in Groundwater	Percent of Groundwater Samples Exceeding a Specific Concentration			
	>5 ug/L	>10 ug/L	>15 ug/L	>20 ug/L
Northern Portion of the Site	25%	10%	5%	2.5%
Southern Portion of the Site	56%	40%	25%	21%

Instead of examining the data collectively, PPG attempted another spatial analysis based on a point-by-point comparison. As noted above (See Exhibit 4621, table embedded above), the point-by-point comparison presented in PPG's July 21 letter is not supported ~~is~~ because it includes side-gradient and downgradient soil borings in the comparison. The soil borings positioned



Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

downgradient or side-gradient relative to a monitoring well would not have an effect on the groundwater contaminant concentrations The table below (See Exhibit 2327, table embedded below) lists the monitoring wells and the “nearest soil boring” assigned by PPG in the July 21 letter. Shallow groundwater gradients are based on the piezometer surface maps presented in RI Figures 2-5 through 2-10 (See Exhibit 10.B-7.).

Formatted: Not Highlight

Exhibit 2327: Comments on PPG Table 2 of PPG July 21 Letter

July 21 Table Reference	Monitoring Well Identified by PPG	“Nearest Soil Locations” Selected by PPG	Comments on Shallow Groundwater Gradients and Soil Boring Locations
PPG Table 2	E-4	B-22, B-27, and B-95	Gradient is northeast. B-27 and B-95 are <b>side-gradient</b> and B-22 is <b>downgradient</b> during high tide and low tide
PPG Table 2	MW-117	B-10, B-11, and B-105	Gradient is either north, east, or west depending on tide. B-10 is <b>side-gradient</b> or <b>downgradient</b> ; B-105 is upgradient only under certain tidal conditions. (Note that no samples were collected from boring B-11.)
PPG Table 2	MW-120	B-61 and B-62	Gradient is either north, east, or west depending on tide. B-61 and B-62 may be upgradient under certain tidal conditions.
PPG Table 2	MW-122	B-102	Gradient is either northwest, west, or southwest depending on tides. B-102 is <b>downgradient</b> during high tide and low tide.

Exemption 5, Deliberative, Attorney-Client

Formatted: Not Highlight

In sum, based on the Region’s analyses above, elevated groundwater lead concentrations are correlated to areas where lead was likely released as a result of current or past operations. The data do not support PPG’s contention that, based on conditions in the northern portion of the Site, lead in shallow groundwater throughout the Site is attributable to historic fill material.

- G. Insufficient Data Support PPG’s Contention that there is Significant Variability in Groundwater Lead Concentrations and Conclusions Made From This Information Should Not be Included in the CSM (Dispute, p. 9).

The RI field program for groundwater (excluding the temporary well point samples) consisted of three groundwater sampling events over a 11-month period. The data collected are insufficient to support PPG’s trend analysis or to statistically evaluate groundwater variability over time. Moreover, as stated in the RI Report (See Exhibit 40.B4.A. at 4-26) when discussing the shallow groundwater results: “The variations of results may be within reproducibly range of measurement or reflect site conditions at time of sampling (seasonal variations, tides or recent precipitation events).” It is not appropriate to include conclusions from a trend or a statistical evaluation of groundwater variability over time in the CSM due to insufficient data.

Exemption 5, Deliberative, Attorney-Client

- H. Region 2’s CSM and FS Report Revisions Do Account for Additional Sources of Lead (Dispute, p. 9).

Formatted: Not Highlight

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

PPG asserts that the Region 2's CSM and the July 10 revisions to the FS Report do not account for additional sources of lead, including historic fill material. (Dispute, p. 9). While the Region's analyses and data discussed above establish that ~~historie~~historical and currant Site operations are ~~major sources~~a significant source of lead in shallow groundwater at the Site, the CSM does not rule out additional sources of lead such as historic fill material, which indeed can contain metals and other contaminants that impact the groundwater. ~~As~~However, as stated in the RI Report, "Historic fill in some areas appears to have been impacted due to historical and/or current operations and chemical/waste handling at the Site. The source of soil contaminants depends on area and contaminants and are likely due to historic fill, past/current operations (spills/releases), and illegal disposal." (See Exhibit ~~10-B4.A.~~, p. ES-2). As recognized in the RI Report, and in the CSM, past operations by PPG as well as current commercial and industrial activities, including operations conducted on Lot 70, are sources of soil contamination.

Formatted: Not Highlight

- I. PPG Incorrectly States that "[m]etals attributable to historic fill are not the result of releases or operations at the Site and, therefore, constitute background concentrations." (Dispute, p. 9)

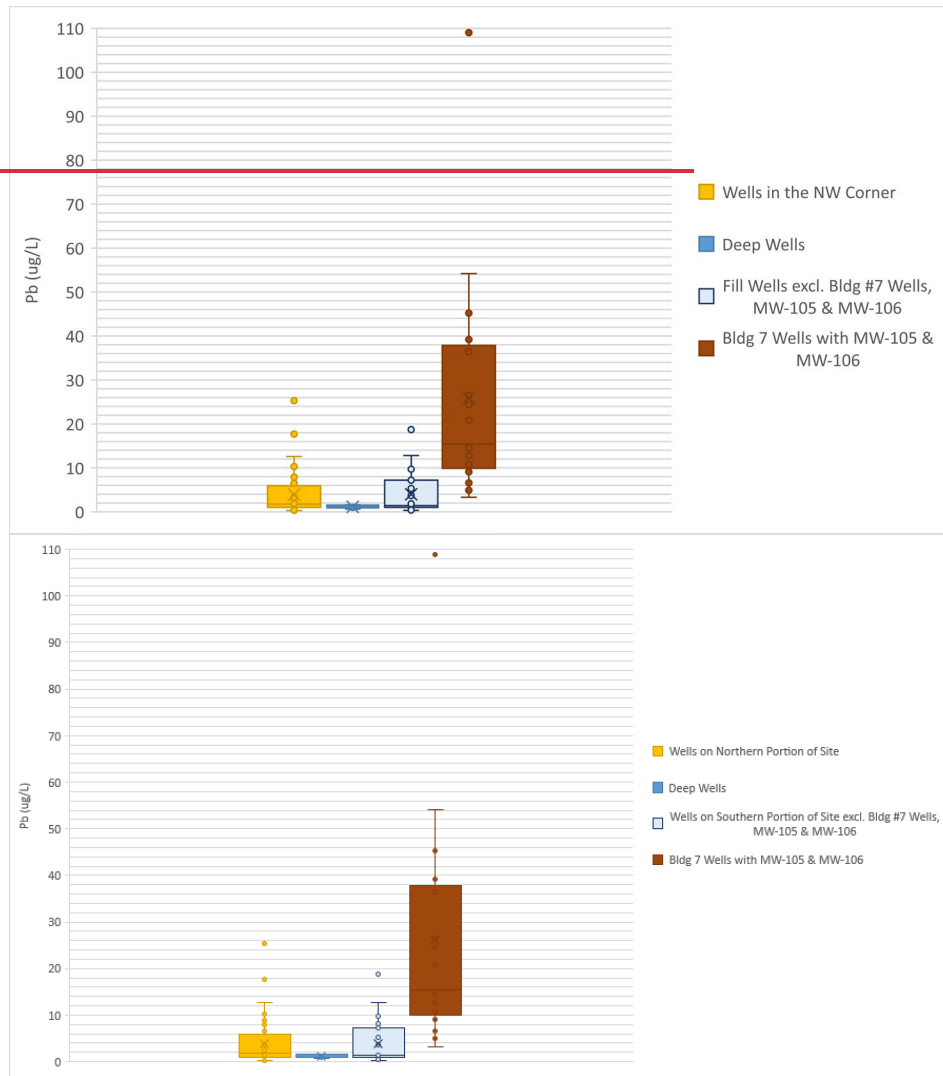
The converse of PPG's statement is also true and undercuts PPG's argument: metals attributable to releases or operations at the Site are not solely indicative of ~~historie~~fill material concentrations, and do not constitute background concentrations.

**Exemption 5, Deliberative,  
Attorney-Client**

~~The~~ total lead concentrations in shallow monitoring wells ~~constructed in historic fill material on the southern portion of the Site~~ (but excluding ~~wells MW-105 and MW-106 near Building #7~~ wells and MW-105 and MW-106) have an average total lead concentration of 3.98 ug/L. (See Exhibit 28, refer to the light blue box-and-whisker), which is very similar to the average total lead concentration in monitoring wells in the

**Exemption 5, Deliberative,  
Attorney-Client**

~~MW-105 and MW-106,~~ have an average total lead concentration of 26 ug/L. (See Exhibit 28, refer to red box and whisker), indicating that soil containing lead released as a result of facility operations is a source of the elevated lead concentrations in the monitoring wells near Building #7.



*Exhibit 28: Distribution of Total Lead Concentrations in Monitoring Wells*

Formatted: Not Highlight

PPG also asserts that a release of potable water from the Newark City system in 2012, caused by Region 2's rupture of a pipe while digging test pits, may be an additional lead source to groundwater at the Site. (Dispute, pp. 9-10). The data do not support PPG's contention. PPG cites 2018 water quality results in its Dispute, while the release of potable water occurred in 2012. In the City of Newark's 2012 Water Quality Report, the year of the release, the 90th percentile concentrations of lead are reported as 9.0 ppb in the Pequannock System and 3.4 ppb in the

Commented [SJ152]: I will need to ask WSP. If we don't think this happened then that should be another point to add.

NJDWSC system. Using the Pequannock's 90<sup>th</sup> percentile value reported in 2012 (9.0 ppb), it would have required a release of approximately 264,000 gallons of City of Newark drinking water to have contributed one gram of lead to the Site. The amount of water released was not documented, but this rupture was resolved in a few hours and sampling continued the next day. It is very unlikely that this single event made a significant contribution to lead contamination at the Site.

- J. None of the "additional contributing factors" cited by PPG would render any of the FS Report's groundwater alternatives ineffective (Dispute, p. 10)

NJDEP has classified the aquifer that underlies the Site as Class IIA, despite site-specific conductivity readings that indicate brackish conditions (refer to Exhibit 10.B.4.A., Section 3.4). Groundwater remedial alternatives have been evaluated in the final FS Report addressing, among others, a future use scenario that would presents an unacceptable risk/hazard to human health and that would satisfy the RAO of restoring groundwater quality. Each of the proposed groundwater remedies would encounter technical challenges, as discussed in the final FS Report under 'Implementability' in the detailed comparison of alternatives. EPA will require a pre-design investigation ("PDI") to support the final design for the selected remedy.

Groundwater Alternatives 3, 4, and 5 all included some level of in-situ remediation as the active remedy to address VOC-, SVOC-, and lead-contaminated groundwater. The final FS Report (Section 5.3.3) acknowledges that the effectiveness of in-situ remediation is dependent on the geochemistry of the aquifer, stating that "It should be recognized that many of the COCs are co-located or are in close proximity, and the in-situ treatment compounds (iron sulfide) require very different geochemical conditions to be present in the area to be effective." Consequently, any geochemical challenges expected in Region 2's preferred alternative for groundwater (Groundwater Alternative 4) would also be encountered in the implementation of PPG's Groundwater Alternative 5. Region 2 is aware that geochemical processes affect the mobility of metals in the groundwater.

Region 2 is aware of the geochemical processes that affect the mobility of metals in the groundwater and the challenges associated with in-situ treatment of lead, however, the groundwater ARARs for Class IIA aquifers must be met for Site related total lead concentrations. Region 2 believes sufficient information has been collected in the Remedial Investigation to move forward with the alternatives presented in the final FS.

Commented [SM153]: "Class" is sometimes capitalized, and sometimes not. Please be consistent.

Formatted: Not Highlight

**Exemption 5, Deliberative,  
Attorney-Client**

### Summary and Conclusions

In response to PPG's invocation of Dispute, pursuant to Paragraph 62 of the ASAOC, with respect to the process followed by the Region when it finalized the FS Report (Process) and the revisions to same when the Region completed it (Substance), neither the Region's decision to complete the FS Report nor its revisions to that document were arbitrary and capricious. Rather, as discussed in detail above, the Region's actions in both regards were rational, reasoned and consistent throughout.

With regard to Process: the Region followed the procedural requirements as per Paragraph 41 of the ASAOC and acted in a reasoned way, when, after providing PPG with sufficient notice, and opportunity to cure the deficiencies in its FS Report submittal and PPG demonstrated an inability to do so, the Region prudently decided to complete the FS report itself. More specifically, with regard to notice, the Region in its "conditional approval" of PPG's FS Report submittal notified PPG of the deficiencies (i.e. material flaws) in its submittal – clearly, concisely and unequivocally (i.e. approval was conditioned upon the incorporation mark-up language provided by the Region). Further, as discussed above, the Region provided PPG with numerous opportunities to cure the deficiencies and the Region reinforced its instructions for how to cure the deficiencies clearly, consistently and often -- both in writing and on phone calls. Lastly, PPG failed to cure the deficiencies in timely manner and as discussed, above, and there was no indication that PPG was making any progress toward curing the deficiencies in its FS Report submittal despite the Region's efforts to guide them. Thus, it was then the Region's election to complete the submittal itself and the Region's decision to do so was not arbitrary and capricious. In fact, it was completely reasoned and rational based on PPG's demonstrated inability to do so and is consistent with the ASAOC's term

### **Exemption 5, Deliberative**

. Thus, for all the reasons stated above, on the matter of Process with regard to this Dispute, the Region respectfully asks that the Director of SEMD rule in the Region's favor that it did not act arbitrarily and capriciously in completing and finalizing the FS Report.

With regard to Substance: Likewise, the Region did not act arbitrary and capriciously in its decisions. As discussed, in detail above, the Region's modifications to the FS Report were technically and legally sound. The Region's CSM is supported by historical and Site data collected during the remedial investigation, which clearly points to past and current operators at the Site, most notably PPG as the primary contributor, to site-wide lead contamination. The Region presented an abundance of evidence described above concerning the magnitude, scale, longevity, and inherently dirty operations of the PPG facility, without any clearly identified, documents of off-site disposal. Furthermore, the data suggests a "top down" source of lead contamination in groundwater is due to historical operations. As a result, one of the RAOs in Region 2's Proposed Plan for groundwater at the Site is to minimize COC concentrations and restore the groundwater quality. Due to the aquifer classification by NJDEP, the groundwater must be restored to Class IIA standards as required by the NCP. Appropriate groundwater alternatives that meet this requirement were carried forward by the Region and PPG's objections to the alternatives finalized in the FS were shown to be unfounded.



Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

Thus, for all the reasons stated above, on the matter of Substance with regard to this Dispute, the Region respectfully asks that the Director of SEMD rule in the Region's favor that it did not act arbitrarily and capriciously in completing and finalizing the FS Report with the necessary requisite language (i.e., substance) that the Region needed for its remedy for the Site.

Formatted: Line spacing: Multiple 1.08 li

Formatted: Font: Bold

DRAFT

References

~~Patton Paint Company, (1897). *Practical Tests and Testimonials. Patton's Sun-Proof Paints*. Argus-Ledger (December 31, 1902). Newark, NJ.~~

Formatted: Font color: Auto

~~Heath & Milligan Mfg. Co. vs. J.H. Worst, 207 U.S. 338 (1907).~~

Formatted: Font color: Auto

~~New Jersey Department of Environmental Protection. (April 29, 2013). *Historic Fill Material Technical Guidance (Version 2.0)*.~~

~~Office of the Chief Engineers of the United States Army (1916). *The Annual Reports, War Department, Fiscal Year Ended June 30, 1916 (Case 225)*. Government Printing Office, Washington, DC.~~

~~P.H. Walker and E.F. Hickson, (August 1924). *Use of United States Government Specification Paint and Paint Materials*.~~

Formatted: Font color: Auto

~~Bernardsville News (January 27, 1903). Barnardsville, NJ.~~

~~Patton Paint Company, (1897). *Practical Tests and Testimonials. Patton's Sun-Proof Paints*. Tumosa, Charles S. and Mecklenburg, Marion F. (2005). *The influence of lead ions on the drying of oils*. *Reviews in Conservation* (6): 39–47.~~

Formatted: Font color: Auto

Formatted: Font color: Auto

~~Pittsburgh Plate Glass Company (1923). *Glass, Paints, Varnishes and Brushes. Their History Manufacture and Use*.~~

Formatted: Font color: Auto

~~Power Plant in the Patton Paint Co. (October 15, 1903). *The Engineer*. Newark, NJ.~~

Formatted: Font color: Auto

~~Tumosa, Charles S. and Mecklenburg, Marion F. (2005). *The influence of lead ions on the drying of oils*. *Reviews in Conservation* (6): 39–47.~~

Formatted: Font color: Auto

Formatted Table

~~Office of the Chief Engineers of the United States Army (1916). *The Annual Reports, War Department, Fiscal Year Ended June 30, 1916 (Case 225)*. Government Printing Office, Washington, DC.~~

Formatted: Font color: Auto

~~New Jersey Department of Environmental Protection. (April 29, 2013). *Historic Fill Material Technical Guidance (Version 2.0)*.~~

~~USEPA (December 2012). *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*.~~

Formatted: Font color: Auto

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

### List of Exhibits

<u>Exhibit</u>	<u>Description</u>
<u>1-A</u>	<u>Letter to PPG regarding Conditional Approval of FS 6-23-2020</u>
<u>1-B</u>	<u>Mark-up of Feasibility Study Test sent to PPG 6-23-2020</u>
<u>1-C</u>	<u>Feasibility Study Response to Comments sent to PPG 6-23-2020</u>
<u>1-D through 1-J</u>	<u>Edits of Feasibility Study Figures, Tables, and Appendices provided to PPG 6-23-2020</u>
<u>2</u>	<u>Email Communication from EPA to PPG 7-10-2020</u>
<u>3</u>	<u>Letter to PPG on 7-21-2020</u>
<u>4-A</u>	<u>Final Remedial Investigation Report 6-30-2020</u>
<u>4-B</u>	<u>Final Remedial Investigation Report Figures 6-30-2020</u>
<u>5</u>	<u>Patton's Sun Proof Paint Brochure</u>
<u>6-A</u>	<u>US Supreme Court Records and Brief</u>
<u>6-B</u>	<u>Clip of Frank Lane Testimony in US Supreme Court</u>
<u>7-A</u>	<u>Use of United States Government Specification Paint and Paint Materials by P.H. Walker and E.F. Hickson (1924)</u>
<u>7-B</u>	<u>Embedded figure, US Government Specifications for Mixing Components of Paint</u>
<u>8</u>	<u>Argus Ledger Dec 31, 1902</u>
<u>9</u>	<u>The influence of lead ions on the drying of oils by Charles Tumosa and Marion Mechlenburg (2005)</u>
<u>10-A</u>	<u>Glass Paints – Pittsburgh Plate Glass Company (1923)</u>
<u>10-B</u>	<u>Embedded Figure, PPG Paint Manufacturing Plan</u>
<u>11-A</u>	<u>Power Plant in the Patton Paint Co. Newark N.J., The Engineer (1903) – Page 1</u>
<u>11-B</u>	<u>Power Plant in the Patton Paint Co. Newark N.J., The Engineer (1903) – Page 2</u>
<u>12</u>	<u>Embedded picture, Photograph of Floor Flapper</u>
<u>13</u>	<u>Embedded figure, Lead and Zinc Correlation in Soil/Fill Material from Riverside</u>
<u>14</u>	<u>PPG Response to 104E Sept 18, 1996</u>
<u>15</u>	<u>PPG Response to 104E Oct 4, 2010</u>
<u>16</u>	<u>NJDEP Historic Fill Material Technical Guidance</u>
<u>17</u>	<u>Embedded Figure, Groundwater Alternative 5 proposed by PPG in July 17, 2020 draft FS</u>
<u>18</u>	<u>Embedded Figure, Figure A-3 from FS Report Appendix A showing delineated areas of lead in soil/fill material that exceed the PRG of 800 mg/kg and the footprint of lead removal around Building #7</u>
<u>19</u>	<u>Letter to PPG on 7-14-2020</u>
<u>20</u>	<u>Letter from PPG/Woodard &amp; Curran on 7-21-2020</u>
<u>21</u>	<u>Embedded Table, Comments on PPG Table 1 of PPG July 21 Letter</u>
<u>22</u>	<u>Embedded Figure, Figure 5 from PPG's July 21 Letter.</u>
<u>23</u>	<u>Embedded Table, Maximum Total Lead Concentration in Monitoring Wells on South Side of Site</u>

Subject to Attorney Client, Work Product, Deliberative Process and/or Joint Prosecution Privileges;  
FOIA/OPRA Exempt

<u>24</u>	<u>Embedded Figure, Pareto (frequency) Chart for Total Lead Concentrations in Monitoring Wells on the North Side of Site</u>
<u>25</u>	<u>Embedded Figure, Pareto (frequency) Chart for Total Lead Concentrations in Monitoring Wells on the North Side of Site</u>
<u>26</u>	<u>Embedded Table, Percent of Groundwater Samples Exceeding a Specific Concentration</u>
<u>27</u>	<u>Embedded Table, Comments on PPG Table 2 of PPG July 21 Letter</u>
<u>28</u>	<u>Distribution of Total Lead Concentrations in Monitoring Wells</u>

Formatted: Left